



Perspectives of Alberta Nurses and Pharmacists on Medication Information Received

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Abstract

Background

The transfer of medication information between two health care sectors is a transition point that is challenging and complex. The literature demonstrates that failures at these transition points pose a great risk to patient safety; however much of this research has been limited to the acute care setting. The continuing care population represents a vulnerable group at high risk for medication adverse events. This research study identifies continuing care nurses and pharmacists perspectives about the transfer of medication information at the specific transition point between acute and continuing care facilities.

Methods

A descriptive cross sectional exploratory study design, utilizing a semi-structured questionnaire to collect information about the transfer of medication information was used. The questionnaire was pre-tested with continuing care nurses and pharmacists. The College and Association of Registered Nurses of Alberta (CARNA) distributed questionnaires by mail to a randomized sample of 500 nurses who indicated gerontology as a specialty and were willing to participate in research. All pharmacists in the province of Alberta were contacted through the Alberta College of Pharmacists (ACP) by e-mail invitation to participate using an on-line version of the questionnaire through SurveyMonkey™. Nurses and pharmacists self identified if they worked in the continuing care sector. The Statistical Package for Social Sciences software was used for quantitative analyses. The narrative, open-ended questions were analyzed using thematic analysis. For each open ended question, responses were individually reviewed and grouped into common themes by two of the investigators. Cross validation of theme identification took place to ensure trustworthiness of data.

Results

Two hundred and sixty five (265) responses to the questionnaire were received. A total of 218 respondents (160 nurses and 58 pharmacists) met the inclusion criteria. The majority of respondents were female (90%) and just over half of the respondents (52%) had greater than 10 years experience working in the continuing care sector. Twenty five percent (25%) of respondents reported medication information received was “always” legible and 27% reported medication information received was “always” complete. Just 10% of respondents reported there was “always” enough information to tell if the prescribed medications were appropriate for the resident’s diagnoses. Contrary to the published literature, only 14% of respondents indicated the resident’s medications for chronic diseases were “mostly” or “always” omitted. Statistically significant differences between nurses and pharmacists perspectives were noted with several questions. A total of 159 respondents (73%) identified in open ended questions that medication information they receive was either incomplete or inaccurate. Many of the respondents identified that the process of completing the transfer of medication information was time consuming and frustrating. Computer generated documents; standardized forms between acute and continuing care facilities and the availability of a pharmacist were identified as strategies to improve the transfer of medication information.

Conclusion

In summary, the results of this study suggest medication information received for new admissions to continuing care facilities from acute care is incomplete or inaccurate. Improving the transfer of medication information at this transition point may reduce the risk of medication adverse events to continuing care residents.

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Introduction

Case Scenario: Mrs. Smith suffered a grand mal seizure three days after admission to a continuing care facility. The seizure precipitated a stroke and she subsequently died after 36 hours on ventilator support. Prior to this event, Mrs. Smith's seizure disorder had been well managed and she had been functioning independently at home with only some mild memory problems. Mrs. Smith was admitted to an acute care hospital after falling and fracturing her right hip. Post operatively she was in a great deal of pain and had difficulty communicating. Mrs. Smith did not have close family members who knew her medical history. Unfortunately, her longstanding seizure disorder was not identified or recognized while she was in the acute care hospital. She did not receive her anticonvulsant medications in either acute care or the continuing care facility. Mrs. Smith's family physician was not aware of her admission to the acute care hospital or her discharge to continuing care until a week after her death. This story, while fictitious, illustrates the devastating consequences of a preventable medication adverse event.

Patient safety has emerged as one of the key health care issues in international, national, and provincial discussions and has sparked a dramatic increase in media and public interest. This is due, in no small part, to the fact that more preventable deaths can be attributed per year to hospitalization than to "risky" activities such as rock climbing, off shore drilling, driving, and coal mining (Hassen, 2005). The pivotal Institute of Medicine (IOM) report "To Err is Human" in 1999 estimated that between 48,000 to 98,000 preventable deaths per year were attributable to adverse events in US healthcare facilities (Kohn, Corrigan, & Donaldson, M.S. (editors for the Committee on Quality of Health Care in America), 1999). An adverse event is defined as "an unplanned and undesired harmful occurrence, directly associated with the care or services provided to a patient, such as an adverse reaction to a medication or a negative outcome of treatment. It is related to problems in practice, products, procedures and other aspects of the system" (Wade et al., 2002). Studies published in the United Kingdom (Department of Health, 2000) and Australia (Wilson et al., 1995) have also found similar rates of adverse events (10%, 16.6% respectively). The Canadian Adverse Event Study (Baker et al., 2004) reported an adverse event incidence of 7.5% among hospital admissions in 2000 that could have resulted in up to 24,000 deaths. These studies focused primarily on acute care settings where healthcare providers closely monitor patients. Currently, published literature is limited for home care, continuing care and community settings. Government, regulatory agencies, healthcare organizations, researchers and healthcare providers have now started to focus on both measuring and improving patient safety across the continuum of care.

Medication Adverse Events

Medication administration is a highly complex and constantly evolving process, involving a complex cycle of diagnosing, prescribing, transcribing, preparing, identifying, administering, monitoring and follow-up. Each step in the cycle has the potential for failure leading to a medication adverse event (Bates et al., 1995). Medication adverse events are cited as the most frequent cause of adverse events affecting patient safety, and are considered highly preventable (Bates et al., 2001; Tam et al., 2005). In Canada alone, one in nine patients admitted to a hospital receives either the wrong medication or the wrong dose of medication (Canadian Institute for Health Information, 2006). In 2004, Forster found that up to 23% of inpatients discharged from Ontario medical wards suffered an adverse event; 72% of these adverse events were medication related. Three percent of these patients died as a result of the adverse event (Forster et al., 2004).

Risk factors that increase the likelihood of medication adverse events have been identified in several studies. These risk factors include older age, increased number of medications, female gender, language or cultural barriers, co-morbidities, staffing mixes, and number of transitions between care levels or care settings (ASHP Continuity of Care Task Force, 2005; Evans, Lloyd, Stoddard, Nebeker, & Samore, 2005; Joch, 2003).

Medication adverse events occur most frequently at points of transition in care (Barnsteiner, 2005). The principal cause at such times is the incorrect or incomplete transfer of medication information (Resar, Rozich, & Classen, 2003). The major failures associated with medication information transfer are (1) wrong or incomplete admitting orders, (2) inadequate discharge orders, (3) insufficient explanation of

discharge medications and (4) poor communication between health professionals (Bailey, 2005). Federico investigated potential causes of adverse events related to the incorrect or incomplete transfer of medication information. Potential causes involved a range of issues around the complexity of communication, bureaucracy, accountability and the lack of team work (Federico et al, 2005).

Challenges faced by the Continuing Care Sector

In Alberta, continuing care services offer a wide range of medical, social, housing and personal care services to the elderly, disabled or chronically ill. Facility based continuing care includes both nursing homes and auxiliary hospitals that provide 24 hour nursing care, personal care and housing. There were 179 facility based continuing care settings in Alberta with approximately 14,300 beds as of April 2005; in addition, there were 267 patients waiting in acute care hospitals and 339 waiting urgently in the community for admission to one of these facilities (Dunn, 2005). The majority of residents in continuing care facilities are seniors with an average age of 76 years, over 25% of residents are over 85 and 20% are under 65 years (Canadian Institute for Health Information, 2006). Eighty-seven per cent of residents are admitted from other levels of hospital care after an acute event like a fall, pneumonia or influenza (Canadian Institute for Health Information, 2006).

In general, residents in facility based continuing care settings have more complex health needs than residents in supportive living or home living settings. Many have at least 2 or more chronic conditions and take between 5-8 medications on a regular basis (Health Quality Council of Saskatchewan, 2004; Canadian Institute for Health Information, 2006). Most residents (over 63%) have some form of cognitive impairment on the Cognitive Performance Scale (CPS) that limits their ability to provide an accurate medication history. The CPS range is from 0-6 with 0 representing intact cognitive performance, 2-3 indicative of mild to moderate cognitive impairment and 4-6 being severely impaired. The CPS average for residents staying less than 92 days in facilities was 2.1 and for residents staying more than 92 days was 3.1 (Canadian Institute for Health Information, 2006).

Family members, caregivers and friends have often assumed the role of advocate and offered information on the resident's medical history. While well intentioned, there are several limitations to the quality of this information; family and friends are only aware of what they have been told, family support may be limited as the nuclear family may be widely dispersed geographically and a variety of family dynamics may be at play. Continuing care residents may have numerous care providers including gerontologists, family physicians, surgeons, internists, oncologists, psychiatrists and hospitalists, all potentially prescribing medications within their specialty but not necessarily in coordination with the primary provider following the patient into the continuing care facility.

Transitions of Care

Healthcare transitions between different healthcare providers and facilities have become commonplace for older adults. With bed shortages across the continuum of care, there is pressure to assess, treat and transition patients as quickly as possible to the appropriate care setting. Transitions in care provide numerous opportunities for the potential breakdown of critical information, including medication information. Any information that transfers between healthcare practitioners regarding patient care has been identified as an important consideration in contributing to patient safety and quality outcomes (Wilson & Van Der Weyden, 2005). The Australian Resource Centre for Healthcare Innovations (2005) identified communication as a process of cooperation involving the sender, the message, the receiver and feedback. The authors went further to explain the communication process is also directly influenced by organizational factors, individual factors and system design factors. All of these factors are interrelated and failures with any one of them can negatively influence patient safety and outcomes. The authors examined the components of a clinical handover, however, they did not specifically address the transfer of medication information, or the uniqueness and realities of the continuing care setting.

Medication changes are also common during transfers between hospital and continuing care settings. The changes may be related to formulary issues, chronic medications being restarted, pain assessments done on admission, and recovery from acute events. Boockvar et al, 2004 found that these medication

changes frequently result in adverse medication events and that interventions specific to the optimal management of medication transfer have the potential to prevent most adverse medication events.

Bayley, Savitz, Rodriguez, Gillanders, & Stoner (2005) studied the barriers associated with medication handovers at transition points. They identified a lack of literature focusing on the technical issues of medication information transfer. The authors specifically examined the technical barriers associated with information transfer and concluded that patient complexity, acuity, treatment type, individual discretion and time constraints all impact the quality of information transfer.

Bailey investigated the impact of implementing an information technology (IT) system on the transfer of medication information. This work provides insight for organizational policy and work design processes. It also identified that IT systems may potentially introduce new barriers to the transfer of medication information as the IT systems are not standardized across the care continuum as patients move across them (Bailey, 2005).

Medication Reconciliation

The process of medication reconciliation is defined as “a formal process of obtaining a complete and accurate list of each patient’s current home medications – including name, dosage, frequency and route – and comparing the physician’s admission, transfer, and/or discharge orders to that list” (Institute for Health Improvement, 2006). The final, and perhaps most critical, step in the process of medication reconciliation involves ensuring that any unintentional discrepancies between the patients’ home medications and admitting, transfer or discharge orders are resolved.

Medication reconciliation has been demonstrated to be a powerful strategy to reduce medication adverse events. It is one of six strategies targeted in *The 100,000 Lives Campaign*. The campaign spearheaded by the Institute for Healthcare Improvement hopes to prevent 100,000 deaths in American healthcare facilities by 2006 by implementing these strategies (Institute for Healthcare Improvement, 2006). The *Safer Healthcare Now!* campaign, the Canadian version of the *100,000 Lives Campaign* has adopted the same six strategies and over 80 healthcare organizations across the country are working specifically on medication reconciliation strategies (*Safer Healthcare Now! campaign*. 2006).

Barnsteiner investigated medication reconciliation in 2005, with the goal of improving the transfer of medication information across settings. This study focused on information transfer within the hospital. Although the study was able to define the scope of the problem within acute care settings it did not consider the exchange between hospital and continuing care. The author concluded that a process to reconcile medication should be emphasized in safety programs and that such programs should involve a multidisciplinary approach. Also noted, was the paucity of literature on this topic and that further research is needed to identify strategies that will reduce the potential for medication adverse events (Barnsteiner, 2005).

In summary, the number of medication adverse events in our healthcare system threatens patient safety. Medication adverse events occur most frequently at points of transition of care. The older population with multiple chronic disease processes and diagnoses experience many points of transition of care between providers and facilities. Moving into a continuing care facility is one of those transition points. A gap in the literature exists regarding the barriers and strategies of medication information transferred to a continuing care facility from an acute care hospital. Perspectives of providers at this particular transition point of care are needed to contribute toward the prevention of medication adverse events.

Research Question

The transfer of medication information between two health care sectors is a transition point that is challenging and complex. A failure at this transition point poses a great risk to patient safety. Much of the research and work on the transfer of medication information focuses within the acute care setting. Despite interest from all health care provider groups about medication safety, there is very little written from the perspectives of continuing care front line staff around the complicated process of receiving medication information for residents newly admitted from the acute care sector.

Both the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and the Canadian Council on Health Services Accreditation (CCHSA) have mandated patient safety goals to improve the effectiveness and coordination of communication among care providers (CCHSA 2006; JCAHO 2006). The complex nature of the medication information transfer process and its high risk to patient safety has clearly been identified in the literature. Organizations will be required to demonstrate effective mechanisms for transfer of information at transition points across the continuum of care. In addition, they will be required to reconcile patient's medications on admission, referral or transfer to another setting, service, service provider, or level of care within or outside the organization (CCHSA, 2006).

The research question is:

What are the perspectives of continuing care registered nurses and pharmacists about the medication information received for new admissions from acute care hospitals?

Further research sub-questions are to:

- identify and describe the barriers about medication information received for new admissions from acute care hospitals to continuing care facilities
- identify and describe strategies that may help reduce medication adverse events at this transition point.

Definitions:

Perspectives: Opinions of pharmacists and nurses.

Medication Information: Details exactly what medications (including medication name, dose, route and frequency) a resident will be on and provides sufficient information to discern whether the medication is appropriate for the resident's diagnoses.

Admissions from acute care hospitals: Patients admitted directly to a continuing care facility from an acute care hospital.

Continuing care facility: Facility based continuing care includes both nursing homes and auxiliary hospitals that provide 24 hour registered nursing care, personal care and housing.

This research may contribute to the theory surrounding the communication of medication information at points of transitions in care. The research results will be used to attempt to describe what the current process or situation is and to provide some depth of information on issues that apply to nurses and pharmacists working in continuing care facilities. The results potentially may inform nurses and pharmacists about the barriers and strategies used by their colleagues to prevent a medication adverse event. The results may be used to consider devising interventions to improve or positively impact the transfer of medication information. Due to the scope of the research study, key stakeholder perspectives including the continuing care resident, family and physician perspectives were not explored.

Ethical Considerations

Ethics approval was obtained through the Health Research Ethics Board B – Health Research (Ethics) in the Capital Health Region. Participation in this study presented a very low risk to participants. Completing the questionnaire was voluntary. Participants may have opted out until the point in time when data was submitted (either by mail or electronically). The SurveyMonkey™ module was designed to allow pharmacists to skip a question if they chose not to answer one. Completion of the semi-structured questionnaire implied informed consent of the participant. The researchers did not state or intimate any benefits to the participants for their participation in this research.

All participants' information and questionnaire responses will remain confidential. The researchers will protect any demographic information provided by respondents. The investigators will not be able to identify the respondents' managers at any time and as such this affords protection for the respondents.

All returned questionnaires will have a unique number assigned to them by one of the researchers involved with data entry of questionnaire responses. One of the researchers will create a written list that identifies the participant by this unique number. The list will only be used for identification and tracking purposes during data analysis. This list will remain in a locked cabinet with the questionnaires until the research study has been completed. The information will be secured in the investigator's secure office for a period of seven years at which point it will be destroyed. All data entered and analyzed within SPSS 14.0 will be kept on a secure password protected computer and on a back-up disc stored in a locked cabinet within the investigator's secure office for a period of seven years.

No individual or particular health region will be identified. On request, the investigators may provide specific Alberta health regions with grouped response data. If there are too few respondents from a particular health region, data groups will be collapsed to assure confidentiality. Any contact information obtained during the pharmacist request for a paper copy of the questionnaire to be mailed was destroyed at the time the information letter, semi-structured questionnaire and reminder post card were sent. This contact information will not be linked or connected to the individual's response in any way. Participants may request an executive summary of the study by providing their mailing information. This information will be held with the strictest confidentiality in a locked cabinet by the investigators until the summary has been sent, at which time it will be appropriately destroyed.

The investigators respective organizations and Alberta continuing care leaders will be informed this study is being conducted (Appendix J).

Strengths/Limitations

Strengths

- A random sample of nurses who work in continuing care facilities throughout Alberta and who have self-identified they are willing to participate in research
- Sampling entire population of Alberta pharmacists
- Questionnaire developed based on findings from a review of the literature and experiential knowledge
- Questionnaire pre-tested by seven individuals (five nurses and two pharmacists) and found to be complete
- Letters of support from CARNA (Appendix H) and ACP (Appendix I)

Limitations

- Respondents may have different perspectives than non-respondents
- Approximately half of the registered nurses declined to be contacted for participation in research; therefore, those who are willing to be contacted may be different than those who are unwilling
- Areas of practice for nurses and pharmacists are self identified therefore, it is possible that we may not have captured all of the eligible participants from the target population
- Will only receive care provider perspectives on the extent of problems and measures to remediate. Will not have actual administrative data regarding medication adverse events to verify.
- Respondent's may not do what they say they do i.e. they may respond to the questionnaire differently than what they actually do in real practice
- Based on an estimated response rate of 40%, we may only get data from less than half of the total respondent population of registered nurses and pharmacists working in the continuing care sector and they may not represent the entire population
- Because this is an exploratory study and we are unsure if we have adequate power to identify between group differences, we will be unable to determine whether nonstatistically significant results are truly reflecting no difference or if we are underpowered
- Perspectives of key stakeholders (physicians, acute care nursing staff, families and residents were not considered in this study

Methods

Study Design

A descriptive cross sectional exploratory study design, utilizing a semi-structured questionnaire to collect information on medication information transfer was used to address the research question.

Sampling

Target population

All registered nurses and pharmacists working in or providing services to continuing care facilities.

Accessible population

Registered nurses and pharmacists working in or providing services to continuing care facilities in Alberta.

Sample Frame

Registered nurses and pharmacists licensed in the province of Alberta. The lists of licensed registered nurses and pharmacists are maintained by the respective professional colleges, the College and Association of Registered Nurses of Alberta (CARNA) and the Alberta College of Pharmacists (ACP).

Registered Nurses

As of October 2006, CARNA had 28,820 members. Of these 28,820 CARNA members, 2086 registered nurses identified their area of responsibility as Geriatrics/Long Term Care. This category includes but is not specific to the continuing care sector. Of the 2086 nurses, 1078 nurses agreed to be contacted for participation in research studies.

Because of the exploratory nature of this research study and not having located any other specific information or preliminary data from other studies looking at this respondent population (Alberta registered nurses working in continuing care facilities), the researchers were limited in their ability to determine a sample size estimate. Therefore, due to feasibility, affordability and anticipated workload issues, a sample size of 500 nurses out of the total 1078 was purposefully selected. From the literature, a 40% response rate was expected leading to approximately 200 nurse respondents (Dillman, 2000).

CARNA used an automated system to randomly select 500 nurses out of the 1078 nurses who had agreed that they may be contacted to participate in research.

Pharmacists

As of April 10, 2006, 3551 pharmacists held licenses in Alberta. However, not all 3551 pharmacists practiced in Alberta. Some of these pharmacists held practicing licenses in other provinces as well and may have actually lived and worked in other provinces. Furthermore, of the 3551 pharmacists, there was no accurate way to determine how many pharmacists or which pharmacists worked in continuing care facilities. Current licensure requirements are to declare community or hospital practice only.

All ACP members are required to have electronic email access to the College. This allows ACP to communicate with the entire membership. Pharmacists were asked to self identify if the questionnaire pertained to their practice area. We were unable to discern the exact number of Alberta pharmacists working in or providing services to continuing care facilities by any other means. Based on the percentage of licensed pharmacists employed in hospital settings in Alberta (n=~426) the researchers roughly estimated there were approximately 150-200 pharmacists working in or providing services to continuing care facilities. From the literature, a 40% response rate was expected leading to approximately 60-80 pharmacist respondents (Dillman, 2000).

Since investigators do not have preliminary data to estimate sample size we are unsure if we will have adequate power in this study. Therefore, the study is exploratory only.

Inclusion criteria

Participants were registered nurses and pharmacists who self identified their area or specialty included working in or providing services to continuing care facilities throughout Alberta. Nurses were registered with CARNA and pharmacists were registered with ACP for the 2006/2007 year.

Exclusion criteria

Nurses and pharmacists who were not working or providing services to the continuing care setting in Alberta. Nurses and pharmacists not involved in reviewing, transferring or recording of medication information for residents admitted to continuing care facilities.

Instrumentation

A semi-structured questionnaire was developed based on a review of the pertinent literature and with the experiential expertise of the investigators, as no other existing tool could be found (Appendix A). The questionnaire was pre-tested by five nurses and two pharmacists working in continuing care facilities to ensure the following: clarity, structure, ease of answering, content, comprehensiveness and length of time to complete. The questionnaire was modified based on this pre-test information. As this research study is exploratory in nature, responses to the questionnaire from nurses and pharmacists are based only on personal perspective, therefore changes may be needed to specific questions if the questionnaire is used for further research.

Basic respondent demographics were collected within the questionnaire to describe general characteristics of the respondents completing the questionnaire e.g. profession, gender, age, first three digits of home postal code, years of employment as a registered nurse or pharmacist, years of employment in continuing care sector and identification of the provincial health region where respondent works or provides services to a continuing care facility. Two screening questions were being asked to ensure only the target population for this study completes the survey (i.e. working or providing services in or to a continuing care facility and involvement in reviewing, transferring or recording of medication information).

Questions determining what the respondent's perspectives were regarding general medication information received for new admissions to their continuing care facility from acute care hospitals were addressed in closed ended questions 10-12. To be able to describe the characteristics of the specific components of medication information received i.e. spelling, usual or recommended therapeutic dosage range, routes, and frequencies, questions 13-19 were included. Specific questions assessing potential strategies used by frontline nurses and pharmacists to improve the medication information received were asked in open ended questions 20-23. The specific question assessing any barriers to medication information being received by frontline nurses and pharmacists was covered in open ended question 24. Finally, feedback from respondents was requested about the questionnaire in an effort to identify questions and items that were unclear or may have led to inaccurate responses. This will provide us with information for any future revisions to the questionnaire.

Efforts to establish content validity of the questionnaire included: a review of the literature, application of the researchers' experiential knowledge, pre-testing of the questionnaire, inclusion of open-ended questions within the questionnaire and attempting to obtain feedback from participants to identify questions that are unclear. Construct validity was not applicable to this instrument as we were not trying to establish a construct. In addition, internal consistency was not applicable since this was not a unitary construct. In this exploratory research we can not determine reliability such as test-retest reliability as data collection was on one occasion only.

Data Collection

CARNA distributed the research study information letter (Appendix B), questionnaire (Appendix A) and a postage paid return envelope to the sample of nurses as described above the first week of November. A reminder post card (Appendix E) was mailed to the same sample by CARNA several weeks later.

A short e-mail message was sent to all ACP pharmacists by ACP office staff (Appendix C) the first week of November 2006. Pharmacists self identified if this research study was applicable to their area of practice. The e-mail included a web link to a webpage that contained the research study information letter and semi-structured questionnaire. SurveyMonkey™, an online web based survey service, was used to administer the questionnaire. A reminder e-mail about the research study was sent by ACP several weeks after the initial e-mail (Appendix F).

Pharmacists had the option of requesting a paper copy of the research study information letter and semi-structured questionnaire if they preferred this to the electronic format (Appendix A, D). A postage paid envelope was included. One of the investigators coordinated the pharmacist mailings.

Strategies utilized to increase overall response rates in both groups included:

- reminder postcards (nurses),
- reminder email notifications (pharmacists),
- broaching a research question relevant to frontline registered nurses and pharmacists,
- arranging agreement with both provincial professional Colleges and Associations (CARNA and ACP) to provide communication and coordination of the questionnaire directly to registered nurse and pharmacist members respectively and
- ability to lend credibility to the research study topic area as the investigators are registered nurses and pharmacists themselves.

Data Analyses

Data from paper copies of the semi-structured questionnaire were manually entered into an Excel database. Data from pharmacists completing the electronic semi-structured questionnaire through SurveyMonkey™ were directly imported into Excel. All data, from either source, were reviewed and evaluated to detect any data entry errors or outliers prior to being imported into Excel. A coding framework for all close-ended responses was utilized during data entry. The Excel database containing all questionnaire responses was exported into the Statistical Package for Social Sciences (SPSS) software version 14.0.

The closed ended questions were analyzed quantitatively using descriptive statistics (means, frequencies) as appropriate. Prevalence rates with confidence intervals were calculated where appropriate. Measures of association were calculated using Pearson chi square tests for categorical data such as profession.

All tests were analyzed for two tailed tests of significance ($\alpha = 0.05$; $\beta = 80\%$ power). Results were considered significant if $p < 0.05$. Where possible, 95% confidence intervals will be identified.

Responses to the narrative, open-ended questions (i.e., questions #20-26) were analyzed qualitatively using thematic analysis. The pharmacists' responses were considered to be a single data set and the nurses' responses a second data set for the purposes of the analysis. This was important so that both similarities and differences in the responses to each open-ended question, by profession, could be determined. Two investigators were involved in the analysis of the qualitative data to increase the trustworthiness of the findings. Specifically, two investigators independently reviewed the responses to each question and grouped them into themes. They then met to discuss and compare their preliminary analysis. Once the sub themes were agreed upon and labeled, they were grouped into broader categories.

Results

Response Rate

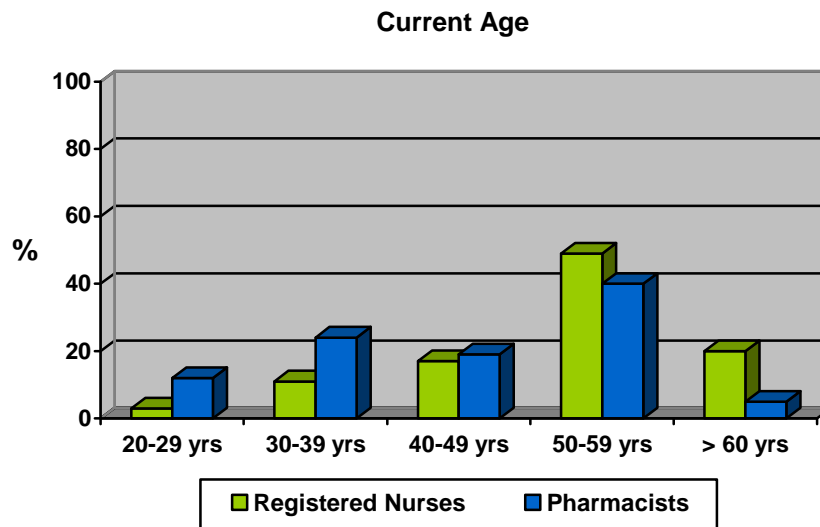
A total of 265 registered nurses and pharmacists responded to the survey. Of the 500 surveys distributed to nurses, 192 were returned (38.4% response rate). Of the 192 returned surveys, 160 were considered eligible for analysis based on inclusion criteria. The majority of ineligible respondents were excluded because they did not practice, work or provide services in or to a continuing care facility or in the last year, they had not been involved in reviewing, transferring or recording of medication information for residents admitted to their facility.

A total of 73 pharmacists accessed and completed the online survey. Of the 73 surveys, 58 were considered eligible for analysis based on inclusion criteria. Response rate could not be calculated as stated previously in the methods section. The majority of ineligible respondents were excluded because they did not practice, work or provide services in or to a continuing care facility or in the last year, they had not been involved in reviewing, transferring or recording of medication information for residents admitted to their facility. Altogether, data from 218 completed questionnaires were analyzed for both groups of respondents.

Demographics

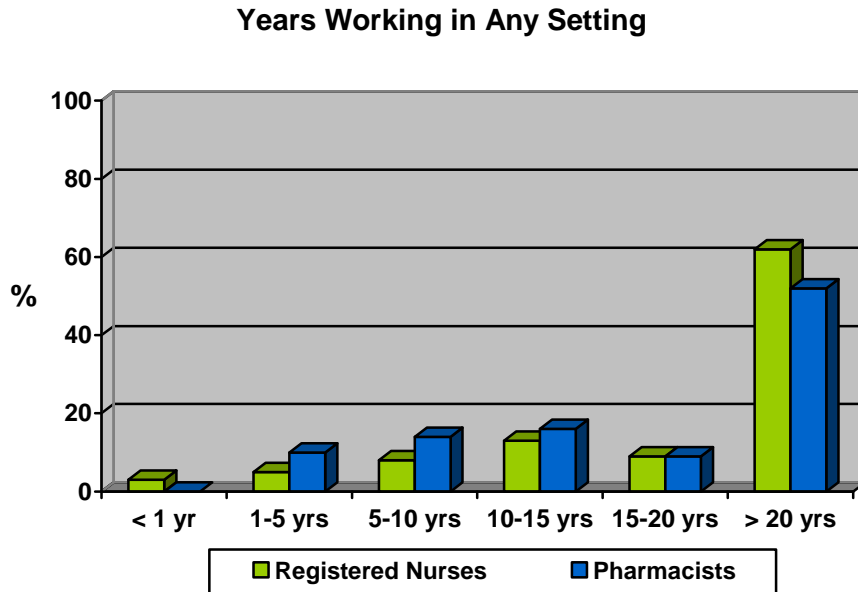
Of the total respondents meeting inclusion criteria, 73% (n = 160) of respondents indicated their profession was as a registered nurse and 27% (n = 58) indicated they were pharmacists. The overwhelming majority of respondents, 90%, indicated they were female (n = 196), with only 10% of respondents being male (n = 22). Over half of all respondents, 62% (n = 135) indicated their current age in years to be 50 years or older. While only 6% (n = 12) were younger than 30 years old. See Graph 1.

Graph 1



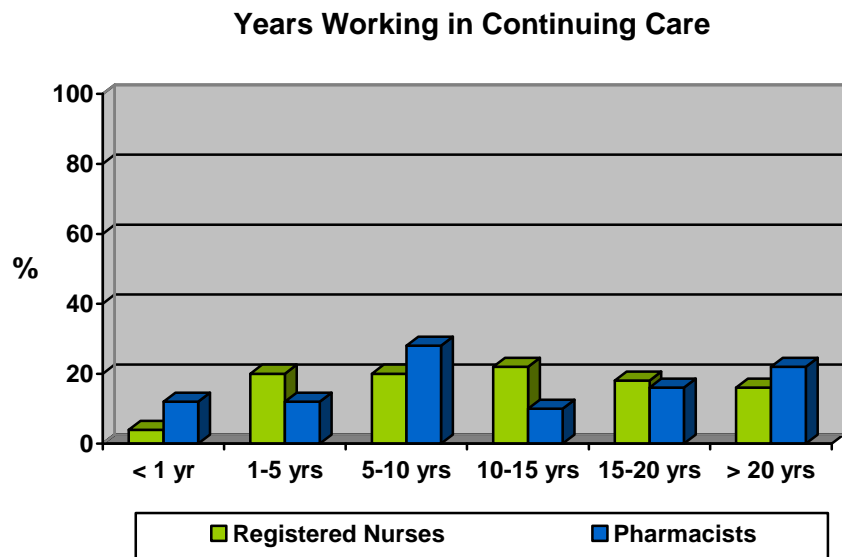
Over half of all respondents, 68% (n = 149) indicated they had worked as a registered nurse or pharmacist in any setting for 15 years or more. While only 9% (n = 10) of respondents had worked for 5 years or less. See Graph 2.

Graph 2



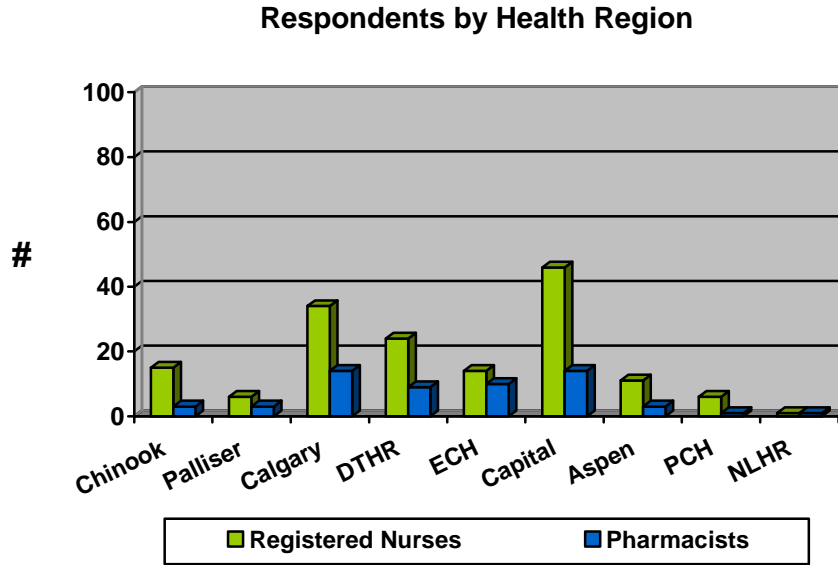
Over half of all respondents, 54% (n = 116) indicated they had worked as a registered nurse or pharmacist in the continuing care sector for more than 10 years. The largest group of pharmacists (28%, n = 16) have worked in the continuing care sector for 5-10 years. While the largest group of nurses (22%, n = 34) have worked in the continuing care sector for 10-15 years. See Graph 3.

Graph 3



Responses received from nurses and pharmacists were geographically dispersed across the province. The majority of respondents 30% (n = 60) were from Capital Health followed by 22% (n = 48) from the Calgary Health Region. See Graph 4.

Graph 4

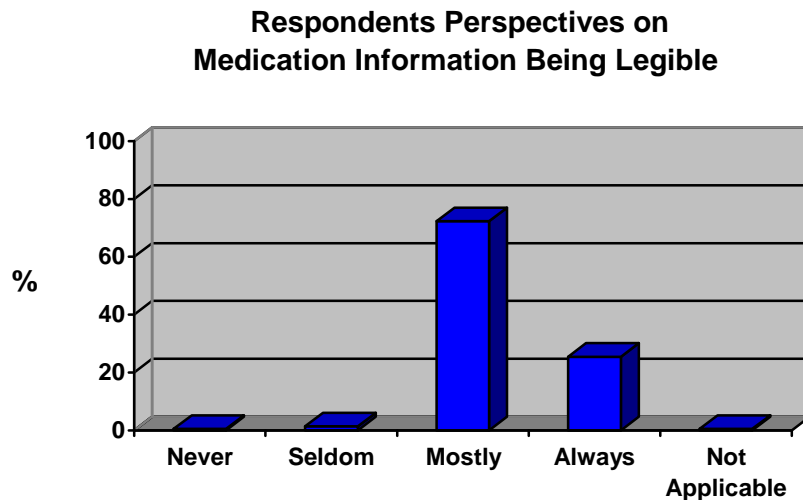


Quantitative Results

Was the medication information received legible?

Only 25% (n = 54) of respondents reported that the medication information received by continuing care facilities from acute care settings was “always” legible. Seventy-two percent (n = 154) of respondents reported that medication information received was “mostly” legible. There was no significant difference between nurses and pharmacists perspectives of the legibility of medication information. See Graph 5.

Graph 5

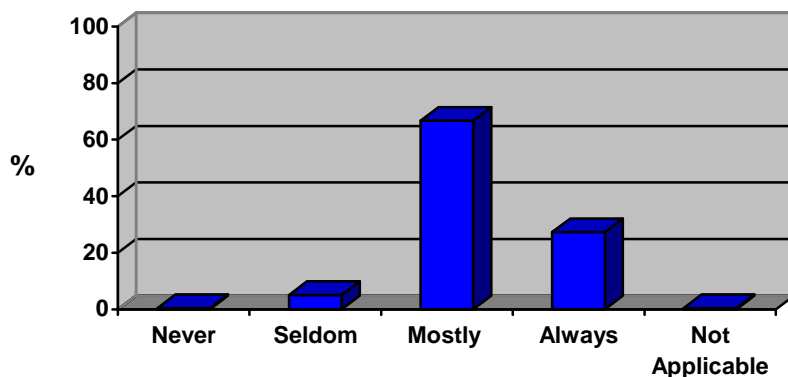


Was the medication information received complete with medication name, dose, frequency and route?

Completeness of medication information received included the name, dose, frequency and route of the medication. Only 27% (n = 59) of respondents reported that the medication information was “always” complete. Sixty-seven percent (n = 144) of respondents reported that the medication information was “mostly” complete. Five percent (n = 11) of the respondents reported that the medication information was “seldom” complete. There was no significant difference between nurses and pharmacists perspectives about the completeness of the medication information received. See Graph 6.

Graph 6

Respondents Perspectives On Medication Information Being Complete

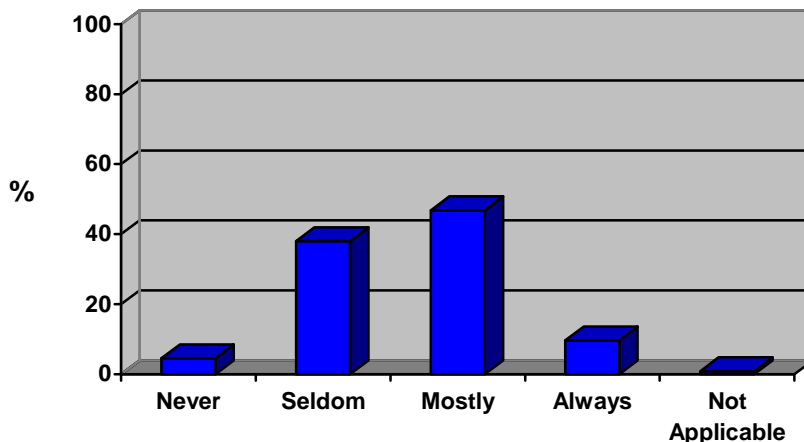


Was there enough information to tell if the medications prescribed were appropriate for the resident’s diagnoses?

Just 10% of respondents (n = 21) reported there was “always” enough information to tell if the prescribed medications were appropriate for the resident’s diagnoses. Less than half of the respondents (47%, n = 101) reported there was “mostly” enough information to tell if the prescribed medications were appropriate for the resident’s diagnoses. Thirty-eight percent (n = 82) of respondents reported there was “seldom” enough information to tell if the prescribed medications were appropriate for the resident’s diagnoses. Five percent (n = 10) of respondents reported there was “never” enough information to tell if the prescribed medications were appropriate for the resident’s diagnoses. See Graph 7.

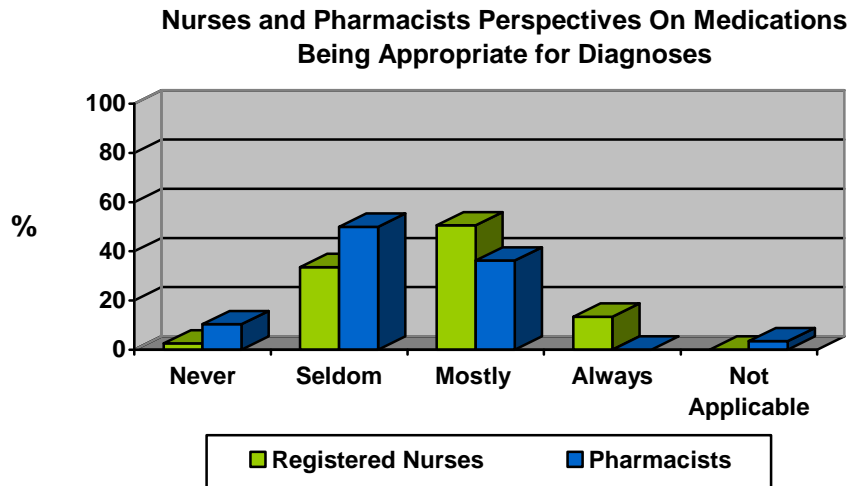
Graph 7

Respondents Perspectives On Medications Being Appropriate For Resident's Diagnoses



There was a significant difference (Pearson Chi-square 23.67 (4df) $p \leq .001$) between the perspectives of nurses and pharmacists with this question. A majority of pharmacists (60%; $n = 35$) reported there was “never or seldom” enough information to determine if the prescribed medications were appropriate for resident’s diagnoses in contrast to 36% ($n = 57$) of nurses. Only 36% ($n = 21$) of pharmacists reported there was “mostly” enough information to determine if the prescribed medications were appropriate for a resident’s diagnoses compared to 51% ($n = 80$) of the nurses. No pharmacists reported there was “always” enough information to determine if the prescribed medications were appropriate compared to 13% ($n = 21$) of the nurses. See Graph 8.

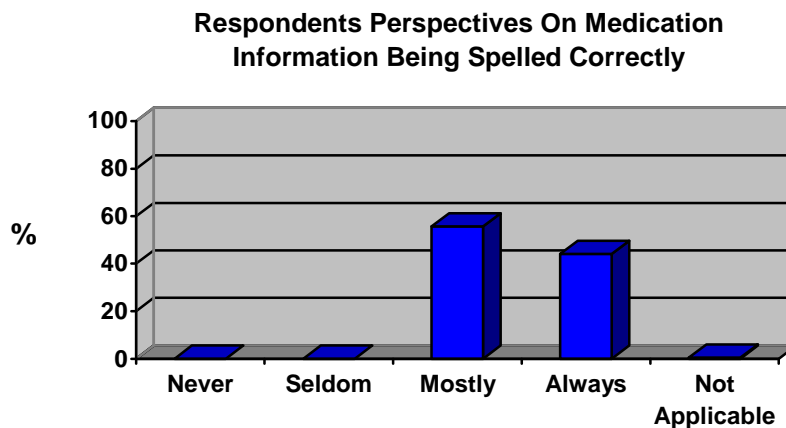
Graph 8



Were the medication names spelled correctly?

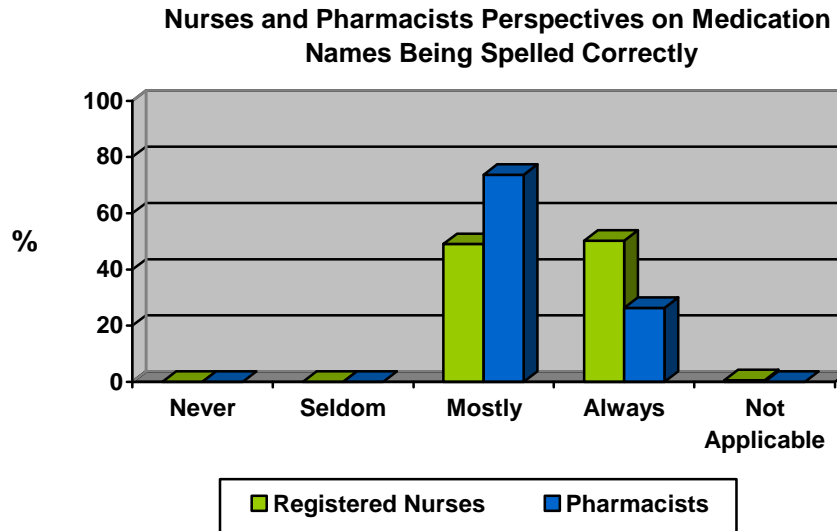
The majority of respondents, 56% ($n = 120$) reported the medication names were “mostly” spelled correctly. Another 44% ($n = 95$) of respondents reported the medication names were “always” spelled correctly. See Graph 9.

Graph 9



There was a significant difference (Pearson Chi-square 10.43; 2df; p=.005) between the perspectives of nurses and pharmacists for this question. The majority of pharmacists (74%; n = 42) reported medications were “mostly” spelled correctly compared to 49% (n = 78) of nurses. Only 26% of pharmacists (n = 15) reported medications were “always” spelled correctly compared to 50% of the nurses (n = 80). See Graph 10.

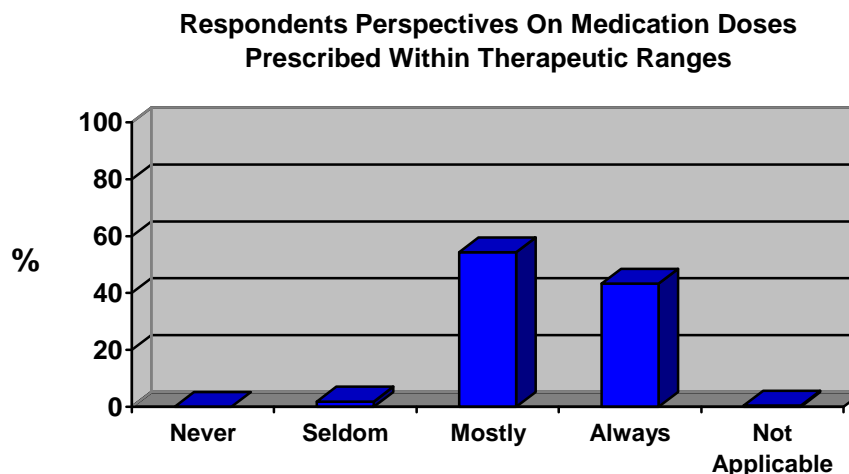
Graph 10



Were the medication doses prescribed within the usual (or recommended) therapeutic dosage range?

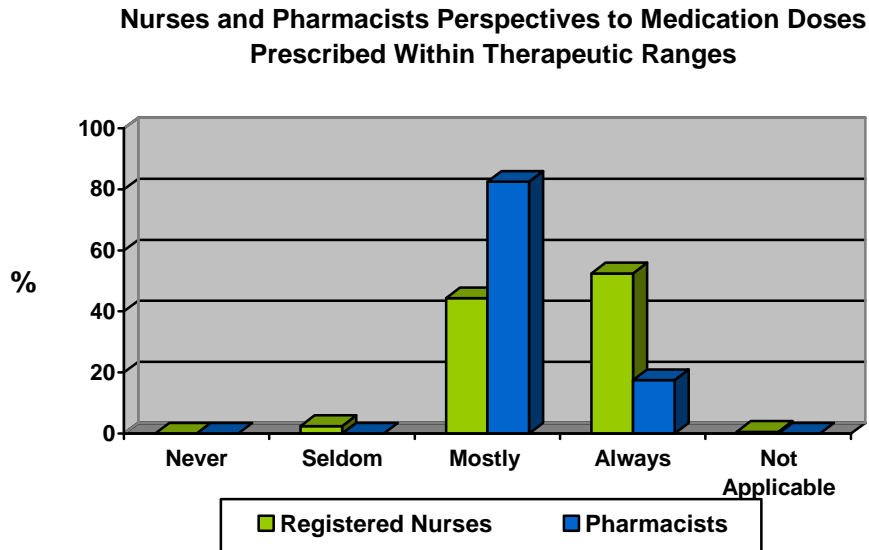
Only 43% (n = 93) of respondents reported the medication doses were “always” within the recommended therapeutic range. The majority of respondents (54%, n = 117) reported the medication doses were “mostly” within the recommended therapeutic range. A small percentage of respondents (2%; n = 4) reported the medication doses were “seldom” within the recommended therapeutic range. See Graph 11.

Graph 11



There was a significant difference (Pearson Chi-Square 24.86; 3df $p \leq .001$) between the perspectives of nurses and pharmacists for this question. The majority of pharmacists (83%; $n = 47$) reported “mostly” the medication doses were within recommended therapeutic range compared to only 44% ($n = 70$) of nurses. Eighteen percent ($n = 10$) of pharmacists reported the medication doses were “always” within recommended therapeutic range compared to over half of the nurses (53%; $n = 83$). See Graph 12.

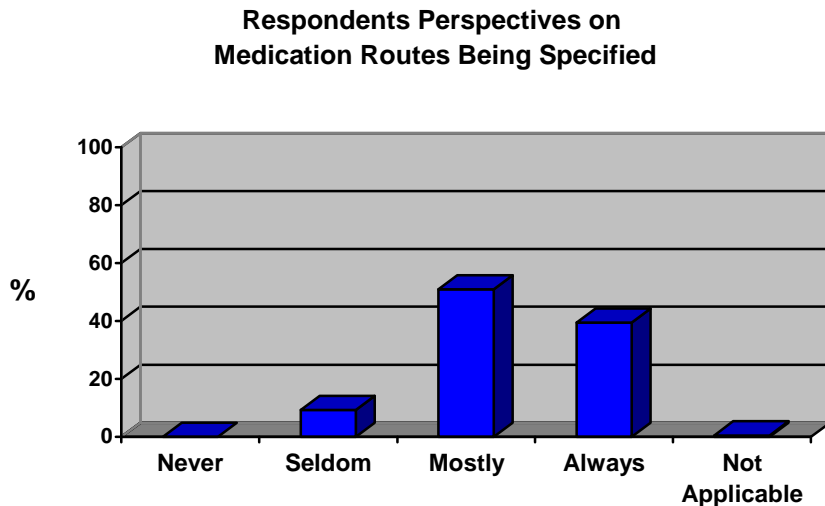
Graph 12



Were the medication routes specified?

A total of 39% ($n = 85$) of respondents reported the medication routes were “always” specified. Fifty-one percent ($n = 110$) of respondents reported the medication routes were “mostly” specified, while 9.3% ($n = 20$) reported the medication routes were “seldom” specified. There was no significant difference between nurses and pharmacists perspectives with this question. See Graph 13.

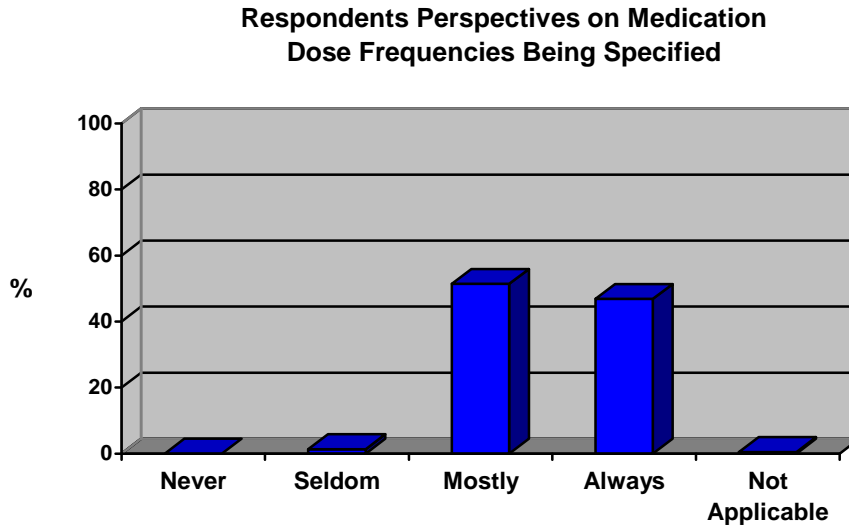
Graph 13



Were the medication dose frequencies specified?

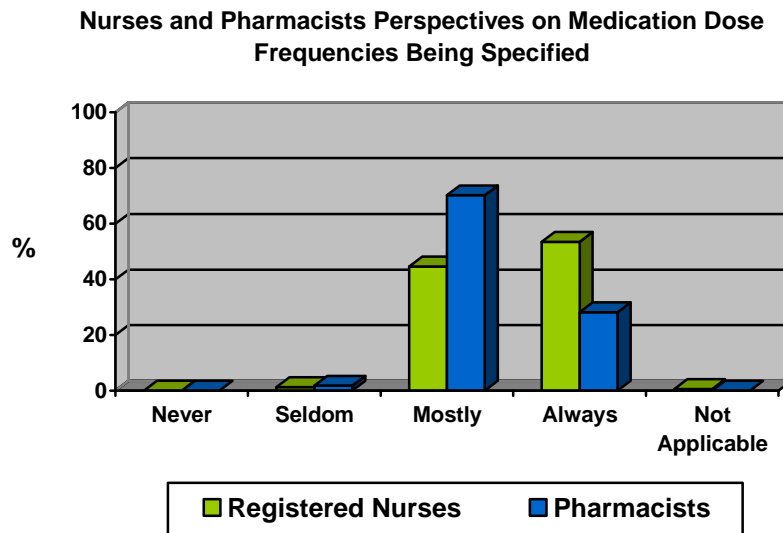
Less than half of all respondents (47%, n = 101) reported the medication dose frequency was “always” specified. A slightly higher percentage of respondents (51% n = 111) indicated this information was “mostly” specified. See Graph 14.

Graph 14



There was a significant difference (Pearson Chi-Square of 11.53; 3df; p=.009) between perspectives of the nurses and the pharmacists for this question. Just 28% (n = 16) of pharmacists reported the medication dose frequencies were “always” specified compared to 54% (n = 85) of the nurses. The majority of pharmacists (70%, n = 40) reported the medication dose frequencies were “mostly” specified compared to less than half of the nurses (45%, n = 71). See Graph 15.

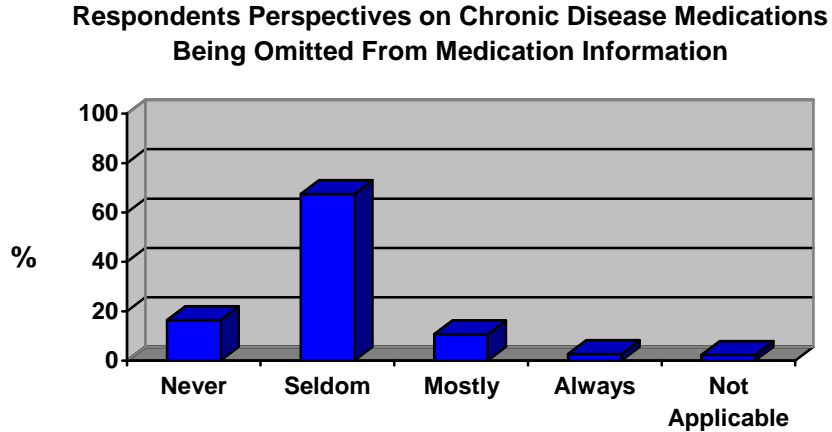
Graph 15



How frequently were resident’s medications for chronic diseases omitted from the medication information received?

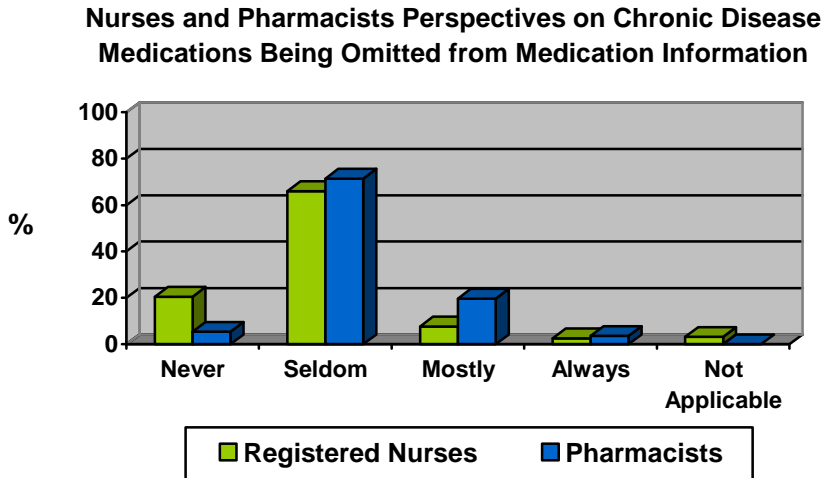
Overall, 84% (n = 178) of respondents reported the resident’s medications for chronic diseases were “never” or “seldom” omitted from the medication information received. In contrast, 14 % (n = 29) reported the residents’ medications for chronic diseases were “mostly” or “always” omitted from the medication information received. See Graph 16.

Graph 16



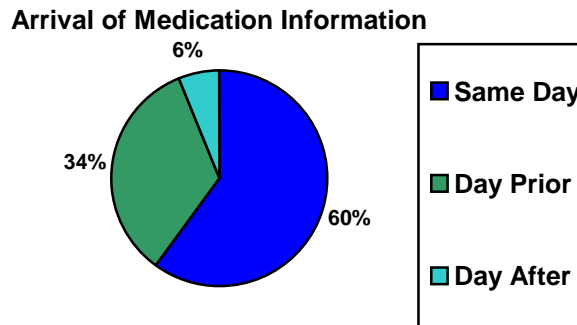
There was a significant difference (Pearson Chi-square 13.28; 4df; p=.01) between the perspectives of nurses and pharmacists with this question. A greater percentage of nurses (21%, n = 32) reported medications for chronic diseases were “never” omitted from the received information compared to only 5.4% (n = 3) of the pharmacists. A greater percentage of pharmacists (20%, n = 11) reported medications for chronic diseases were “mostly” omitted compared to a small number of nurses (8%, n = 12). See Graph 17.

Graph 17



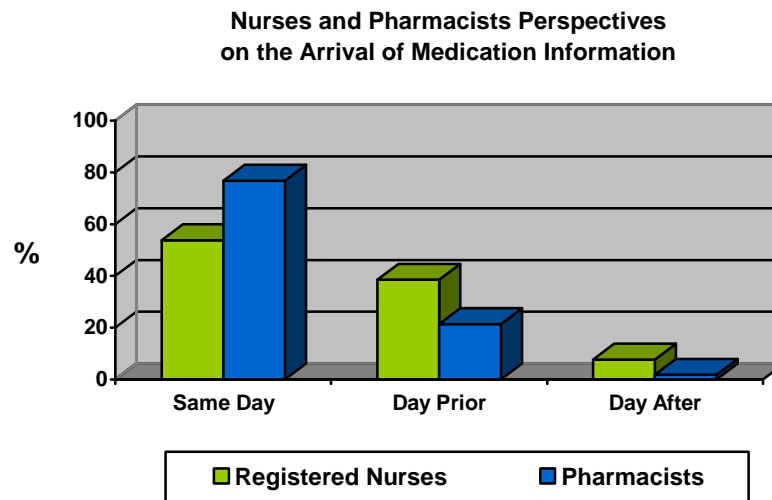
In thinking about when medication information usually arrives in your continuing care facility, does it most often arrive: the same day, the day prior to or the day after the resident's admission? Overall, 60% (n = 127) of respondents reported the resident's medication information usually arrives at the continuing care facility on the same day as the resident. Less than half of all respondents, 34% (n = 72), reported the medication information arrived the day prior to the resident's admission. In contrast to 6% (n = 13) of respondents reporting the resident's medication information arrives after the day the resident arrives at the facility. See Graph 18.

Graph 18



There was a significant difference (Pearson Chi-square 9.48; 2df; p= .009) between the perspectives of nurses and pharmacists for this question. A majority of pharmacists (77%, n = 43) reported the medication information arrived the same day as the resident compared to 54% (n = 84) of nurses. Only 21% (n = 12) of pharmacists reported medication information arrived one day ahead of the resident compared to 39% (n = 60) of nurses. Fewer pharmacists (2%, n = 1) compared to nurses (8%, n = 12) reported medication information came after the day of the resident's admission. See Graph 19.

Graph 19



When the medication information does not arrive with the resident, how long does it take to receive the medication information?

The majority of respondents (68%; n = 149) reported the medication information arrived less than 24 hours after the admission. An alarming 14% (n = 29) of respondents reported medication information

arrived 24 to 48 hours after the admission of a resident. There was no significant difference between nurses and pharmacists perspectives with this question.

Does your continuing care facility or pharmacy use any type of tool, process or procedure (e.g. checklist, computer program) to assist in receiving medication information?

Over half of the respondents 51% (n = 110) reported their continuing care facility or pharmacy used a tool, process or procedure to assist in receiving medication information. There was no significant difference between the perspectives of nurses and pharmacists. The findings overall were difficult to interpret and understand. Many respondents indicated in the open ended questions that this particular question was poorly understood and they didn't know what we meant by a tool.

If "Yes", is the tool, process or procedure used consistently?

Of the 51% of respondents reporting they used a tool, process or procedure only 37% (80) reported the tool, process or procedure was used consistently on all new admissions from acute care hospitals. There was no significant difference between the perspectives of nurses and pharmacists. These findings were also difficult to interpret and were inconclusive. The authors assume this is because of a poorly designed question.

Qualitative Results

Please describe what you do when the medication name, dose, frequency, or route is not complete.

This open ended question was answered by 203 (93%) participants. One hundred and fifty-nine (159) of these respondents (73% of the total 218 survey participants) took the time to identify in this open ended question that the medication information they receive was incomplete or inaccurate. One respondent noted that *"every discharge to our facility requires a phone call to clarify meds or to double check missing meds to see if they have actually been d/c (discontinued) or just forgotten"*. A higher percentage of pharmacists who responded to this question indicated the medication information was not complete (90%) compared to the number of nurses who responded to this question (66%). One nurse commented that he/she did not *"feel it is a RN responsibility to check to see if dose is appropriate"*.

Respondents indicated they used a variety of strategies to try to complete the medication information. The types of strategies were grouped into five major themes: contact the physician for further information, follow up with the transferring facility, involve a pharmacist, check previous MAR (medication administration record) or other medication records, and involve resident or family member/caregiver. Respondents identified that the physician involved could be the discharging physician, the resident's family physician, or the attending physician for the continuing care facility who was accepting the resident in care. Respondents indicated the nursing unit, discharge coordinators or medical records department at the transferring facility could be contacted for clarifications. Pharmacist involvement could be from the acute care sending facility, the continuing care pharmacist for the receiving facility, or the local community pharmacist. Barriers and challenges identified in using these strategies are summarized in the responses to the question below specifically asking about barriers or challenges.

Please describe what you do when there is not enough information to tell whether a medication is appropriate for one of the resident's diagnoses.

This open ended question was answered by 187 (86%) respondents. A number of respondents felt that this part of the medication information was more difficult to complete: *"usually it takes much more investigating to determine indications for all meds"*, *"rarely, if ever do we receive resident's diagnosis or medical conditions"*. Respondents indicated they use similar strategies to those outlined above for determining whether the medications are appropriate for a resident's diagnoses. Some of the respondents indicated they would wait for a medication or physician review which could take weeks to months.

More pharmacists than nurses indicated they would involve the resident or their family in this process when medication information regarding diagnosis was lacking or missing. Pharmacists were also more

likely to contact the sending facilities during the medication information transfer process, while nurses were more likely to contact the physician. Pharmacists used multiple sources of medication information (MAR, computer generated records, retail pharmacy histories) and were more likely than nurses to complete a medication review for new residents arriving to their facility.

Please describe any other barriers or challenges you have experienced when receiving medication information for new admissions from an acute care hospital to your continuing care facility?

Barriers or challenges:

This open ended question was answered by 153 respondents. Respondents identified several barriers or challenges to the transfer of medication information. Seventy-three (73) respondents indicated the medication information received was incomplete or fragmented despite the fact that there was a specific quantitative question answered previously regarding the completeness of medication information. Barriers or challenges included insufficient information to match the resident's diagnosis to the medication, MAR did not match discharge summaries, discharge prescriptions were missing or incomplete, and medications for chronic conditions may have been omitted.

Respondents also indicated difficulties in contacting the appropriate resource to clarify the orders; the discharge physician was often difficult to contact (n = 25), multiple prescribers may have been involved in the care, and new attending physicians were unfamiliar with the resident (n = 11). Multiple respondents indicated a stepwise approach to contacting other health professionals for information, starting with the nurse, then pharmacist then physician.

Many respondents (n = 80) also indicated the timing of the medication information arrival was a barrier. Specific challenges included information arriving after the resident's arrival, at the end of the day or weekends and holidays when pharmacy services were not available, medical charts had already been sent to medical records at the discharging facility and staff had changed shift at the discharging facility. More pharmacists (53%) than nurses (30%) indicated the timing of the transfer of medication information was a barrier. Some of the respondents indicated it could take weeks, and *"occasionally it has taken up to 3 months"* to get all of the medication or history information.

A number of respondents (n = 20) indicated clarifying medication information is a time consuming process for both continuing care and acute care staff. One respondent thanked us for *"taking the time to investigate this frustrating & often unsafe practice"*. It often involves numerous phone calls to find the right person to give the right information at the right time. Continuing care nurses who responded to the open ended question identified there was a lack of understanding between acute care and continuing care staff around the type of medication information required at each facility. One respondent was frustrated by the attitude of acute care nurses and noted *"we are ALL very busy"*.

Barriers and challenges between acute care and continuing care settings included the type of forms used, type of information needed and how it is recorded. Respondents described having to search through a variety of medical records and formats to try and find the necessary information. One respondent noted that *"medication assessment is made more difficult when staff are not familiar with another agency's medication administration records"* while another commented *"med sheets from hospitals outside of our town are often vague and confusing"*. One respondent gave the example of the acute care order *"Check chart"* for items such as insulin and warfarin. Thirty-five (35) respondents identified handwritten prescriptions or poor quality faxes as a barrier to the transfer of medication information. One respondent noted that the *"the two biggest obstacles I find are illegible writing and no rationale for certain drugs"* while another indicated that *"hand written scripts often miss orders"*.

Both nurses and pharmacists described having difficulty with formulary issues. One respondent commented that *"on all our long term care admissions we are required to change at least one and often multiple meds back to meds in the long term care formulary. This can affect the delicate health status of our long term care residents"*. Another respondent noted that *"the biggest problem we find is that acute*

care does not take into consideration the meager continuing care formulary and budget". For example, acute care physicians ordering high cost items not on the continuing care formulary require either a substitution to be made, resident or family members to pay for the medication, or special authorization forms to be filled out by the physician. Difficulties in finding a physician (whether the discharging physician, new attending, or family doctor) willing to complete the special authorization requests for non-formulary items were also documented.

Respondents also raised concerns about medications for chronic conditions that may have been missed while in acute care and therefore not ordered on transfer. One respondent noted that *"often residents arrive with only the medications used to treat their acute process and not (a) complete list"* of those they were taking prior to being in acute care. One respondent gave the example of a resident who missed 3 months of a chemotherapy regimen for cancer of the prostate as this was being given in the oncology clinic and not in acute care. Concerns were also raised around medications that were being given in acute care for the acute condition (eg. Heparin, pain medication or antibiotics post surgery, nebulizers post pneumonia) that did not indicate any stop date or whether therapy should change to a different form (eg intravenous antibiotics to oral).

Please describe any strategies that you use when receiving medication information from acute care hospitals to ensure it is complete.

Strategies:

This open ended question was answered by 147 respondents. In addition to the detail identified under question 20 and 21 around what respondents do when medication information is not complete, respondents identified several strategies used to ensure the completeness of medication information. One hundred and two (102) respondents indicated that they accessed the services of a continuing care pharmacist when completing the transfer of medication information. One respondent commented having a pharmacist available was a *"God-send and well respected go-between for continuing care staff and physicians"* while another commented *"having the pharmacist make rounds with the RN on new admissions is very helpful"*.

Forty-eight (48) respondents indicated receiving medication information prior to the resident's arrival was valuable in completing the transfer of medication information. One respondent noted she had not experienced any problems with the completeness of the medication information as her facility has a process where *"we know a few days ahead...our pharmacist speaks to the pharmacist from the sending institution"* and clarifies any discrepancies or challenges prior to arrival. However, one of the pitfalls identified with sending the information early was that any last minute changes in medications may not be captured in the transfer process. One respondent *"had several instances where orders were written at acute care after the med profile had been printed and sent to the continuing care facility. These new changes are not always adequately communicated"*.

Respondents indicated that standardized forms could increase the consistency of the medication information being transferred. Suggestions for computer generated discharge prescriptions or medication profiles were identified as a strategy to improve the process for transferring medication information. Several respondents commented that computer printouts are usually easier to read.

Summary of Findings

Overall, respondents indicated medication information received was incomplete or inaccurate for a variety of reasons. Only 25% of this sample of Alberta continuing care nurses and pharmacists reported medication information was "always" legible and "always" complete with medication name, dose, frequency and route. Only 10% of the respondents reported there was "always" enough information to tell if the prescribed medications were appropriate for the resident's diagnoses. Less than half of the respondents reported the medications were "always" spelled correctly; medication doses were "always" within therapeutic range, and medication routes and dose frequencies were "always" specified. A majority of the respondents reported the resident's medications for chronic diseases were "never" or "seldom" omitted from the medication information received. Most respondents reported medication information arrived the same day as the resident's admission.

Statistically significant differences were found between perspectives of nurses and pharmacists. A greater percentage of pharmacists reported there was not enough medication information to tell if the prescribed medications were appropriate for resident's diagnoses; medications were not spelled correctly, medications were not within therapeutic range and medication dose frequencies were not specified as compared to nurses. Incongruence was noted between quantitative and qualitative findings on whether respondents reported information for chronic disease medications was omitted.

Many of the respondents identified the process of completing the transfer of medication information was time consuming and frustrating. It was apparent the process for receiving medication information varies widely. Indeed, some respondents indicated the process actually varied within their own facility depending on who was working, time of day or day of the week, and complexity of medication information. Strategies respondents identified they used when medication information was not complete for name, dose, frequency, or route of medication were very similar to strategies used when there was not enough information to determine if the medication was appropriate for one of the resident's diagnoses.

Respondents identified they were limited by the fact the questionnaire only dealt with medication information. Investigators got the impression from respondents they needed a comprehensive picture of the resident's information including care plans, expectations, and goals. A number of the respondents mentioned concerns about the community based senior population who are also at high risk of medication adverse events, and do not have the resources of continuing care available to them.

Discussion

This study focused on one specific transition point where medication information is transferred for a new admission from an acute care hospital to a continuing care facility. This sample of Alberta continuing care nurses and pharmacists reported new admissions arrive with medication information that is not always legible and/or complete. A number of other studies and literature reviews have reported medication information is incomplete at a transition point (Barnsteiner, 2005; Bayley, Savitz, Rodriguez, Gillanders, & Stoner, 2005; Chevalier, Parker, MacKinnon, & Sketris, 2006). Barnsteiner's literature review (Barnsteiner, 2005) identified the most common type of error affecting patient safety occurs at points of transitions in care such as discharge to another facility. Spinewine et al., 2005 studied the inappropriate use of medicines for elderly inpatients admitted in acute care. One of their findings was the limited transfer of medication information from primary to secondary care. Chevalier et al., 2006 studied the perceptions of nurses about medication safety and medication reconciliation practices in a Canadian acute care hospital. The processes of handoffs and transitions received the lowest positive responses.

Alberta continuing care nurses and pharmacists in this study reported there was not enough medication information to tell if the prescribed medications were appropriate for the resident's diagnoses. An Ontario study on inappropriate prescribing before and after nursing home admission found inappropriate prescriptions declined after nursing home admissions (Dhalla et al., 2002). Boockvar et al., 2004 reported medication changes are common during transfer between hospital and nursing home and a cause for errors.

Respondents in this study indicated difficulties contacting an acute care nurse, pharmacist or physician to clarify medication information leads to a time consuming and frustrating experience. This finding was similar to an Ontario study by Chevalier et al., 2006 who reported nurses identify a lack of communication between health care professionals; time consuming processes for clarification of medication changes at transfer; and ensuring accurate discharge orders. Wong & Beglaryan, 2004 reported failures in communication between health care teams is an underlying cause of adverse events. Complex organizations and systems need information systems that provide smooth communication within and amongst health care teams.

Responses to the quantitative question "How frequently were resident's medications for chronic diseases omitted from the medication information received?" indicated medications for chronic illnesses were seldom omitted. In contrast, narrative respondents identified that frequently medications for chronic

conditions are omitted. A qualitative study by Spinewine et al., 2005 reported that medications for chronic conditions were not appropriately reviewed due to a lack of written information. In our study, these findings were congruent with the qualitative responses but in contrast to the quantitative responses.

Respondents in this study identified timing of the arrival of medication information as a challenge. Information that arrives late may lead to both operational delays in obtaining medications, as well as frustration and additional time spent trying to complete the information. In Kripalani's study, late arrival of discharge information was identified as a significant risk to patient safety (Kripalani et al., 2007). In this study only 14.5% of discharge summaries reached primary care providers within one week after discharge, and 25% of discharge summaries never reached the primary care provider. Standardized computer generated forms were identified in this study as interventions that increase the timeliness of discharge information being received. Standardized computer generated forms, based on a discharge checklist specific for seniors, were also recommended by the Society of Hospital Medicine as an intervention to improve the transfer of information (Halasyamani et al., 2006).

Limitations of Study

Respondents answering this questionnaire may have different perspectives than non-respondents. Nurses who declined to participate in research may have different perspectives than those who do. This sample may not represent the entire population of nurses and pharmacists who work in the continuing care sector in Alberta. No actual administrative data was collected regarding the completeness of medication information to validate nurses' and pharmacists' perceptions. Although the questionnaire was pre-tested, reliability and validity of the questionnaire had not been established. Perceptions of physicians, acute care health care professionals, residents and families were not included. As an exploratory study, adequate power to identify between group differences could not be determined; therefore, non-statistically significant results may not reflect a difference between groups because the study was underpowered.

Implications for Medication Information Transfer at Transition Points

This study identifies perspectives of continuing care nurses and pharmacists about the quality of medication information they receive on admissions from acute care. Continuing Care pharmacists need to play a key role in the transfer of medication information for any new admissions to continuing care. Easy access to a designated health care provider in acute care may minimize the potential of medication adverse events. Recognition of the different medication formularies approved for use in acute care and continuing care is essential to the transfer of medication information. A systematic medication reconciliation process including a standardized regional computer generated medication information form is required. This study may increase the awareness of all health care providers that the quality of medication information transferred between settings is crucial.

Future Research Questions

What are the perspectives of acute care nurses, pharmacists and physicians on the transfer of medication information?

What are the perspectives of physicians working in continuing care on the transfer of medication information?

What are the perspectives of residents and families in continuing care on the transfer of medication information?

What are the reasons for medications being changed at transition points?

Dissemination

Results of the study will be shared at the SEARCH V conference in June 2007. An executive summary will be shared with all of the health regions as well as CARNA and ACP. The full study report will be

made available to the following provincial health regions: Calgary Health Region, Capital Health, Peace Country Health and Regina Qu'Appelle Health Region. As well, the full study report will be sent to SEARCH Canada and CapitalCare.

The dissemination of this research will start immediately following the conclusion/findings of this study by raising awareness in the organizations and health regions directly involved. Our desire is to inform decision makers involved in implementing communication strategies for the safe and improved transfer of medication information across care settings. Communication of this project will directly or indirectly occur with the Chief Executive Officers, regional health boards, and senior management teams from the investigators' respective health regions. Our findings will assist in prospective planning, discussion and idea creation. General staff awareness for nurses and pharmacists working in continuing care facilities will occur through regional newsletters and presentations at the end of this research study. We plan to publish our results in a relevant practice based peer reviewed journal. In addition, executive summaries will be sent to any nurses and pharmacists who indicated they would like a copy.

Budget

This research study cost approximately \$4,971.16 in addition to in kind services received from all of the investigators' health care regions. Seed funding was received from the SEARCH Canada Classic Program. Funds were administered through SEARCH Canada. The investigators are supported by their health regions. Please see Appendix G for further details.

References

- ASHP Continuity of Care Task Force. (2005). Continuity of care in medication management: Review of issues and considerations for pharmacy. *Am J Health-Syst Pharm*, 62, 1714-20.
- Australian Resource Centre for Healthcare Innovations. (2005). *Clinical handover and patient safety literature review report* No. 3640). Australia: Australian Council for Safety and Quality in Healthcare.
- Bailey, J. (2005). Improving patient safety through technology. *The Pennsylvania Nurse*, 60(3), 11.
- Baker, G. R., Norton, P. G., Flintoft, V., Blais, R., Brown, A., & Cox, J., et al. (2004). The Canadian adverse events study: The incidence of adverse events among hospital patients in Canada. *CMAJ : Canadian Medical Association Journal = Journal De l'Association Medicale Canadienne*, 170(11), 1678-1686.
- Barnsteiner, J. H. (2005). Medication reconciliation: Transfer of medication information across settings-keeping it free from error. *The American Journal of Nursing*, 105(3 Suppl), 31-36.
- Bates, D. W., Cullen, D. J., Laird, N., Petersen, L. A., Small, S. D., & Servi, D., et al. (1995). Incidence of adverse drug events and potential adverse drug events. implications for prevention. ADE prevention study group. *JAMA : The Journal of the American Medical Association*, 274(1), 29-34.
- Bates, D. W., Cohen, M., Leape, L. L., Overhage, J. M., Shabot, M. M., & Sheridan, T. (2001). Reducing the frequency of errors in medicine using information technology. *J Am Med Inform Assoc*. 2001 Jul-Aug; 8(4): 299-308, 8(4), 299-9.
- Bayley, K. B., Savitz, L. A., Rodriguez, G., Gillanders, W. & Stoner, S. *Barriers associated with medication information handoffs*. Retrieved April 20, 2006 from *Advances in Patient Safety: From Research to Implementation*. Volumes 1-4, AHRQ Publication Nos. 050021 (1-4). February 2005. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.ahrq.gov/qual/advances/>
- Boockvar, K., Fishman, E., Kyriacou, C. K., Monias, A., Gavi, S., & Cortes, T. (2004). Adverse events due to discontinuations in drug use and dose changes in patients transferred between acute and long-term care facilities. *Archives of Internal Medicine*, 164(5), 545-550.
- Canadian Council on Health Services Accreditation (CCHSA) accessed September 20, 2006 on the web at <http://www2.cchsa-ccass.ca/PatientSafety>
- Canadian Institute for Health Information (2006). *An emerging portrait of the continuum*. Facility-based Continuing Care in Canada, 2004-2005.
- Chevalier, B. A., Parker, D. S., MacKinnon, N. J., & Sketris, I. (2006). Nurses' perceptions of medication safety and medication reconciliation practices. *Canadian journal of nursing leadership*, 19(3), 61-72.
- Department of Health. (2000). *An Organization with a Memory*. London: The Stationery Office.
- Dhalla, I. A., Anderson, G. M., Mamdani, M. M., Bronskill, S. E., Sykora, K., & Rochon, P. A. (2002). Inappropriate prescribing before and after nursing home admission. *Journal of the American Geriatrics Society*, 50(6), 995-1000
- Dillman, D. (2000). *Mail and Internet surveys: The tailored design method* (2nd Edition). New York: John Wiley and Sons.
- Dunn, F. J. (2005). *Report of the auditor general on seniors care and programs*. Edmonton: Government of Alberta.
- Evans, R. S., Lloyd, J. F., Stoddard, G. J., Nebeker, J. R., & Samore, M. H. (2005). Risk factors for adverse drug events: A 10-year analysis. *The Annals of Pharmacotherapy*, 39(7-8), 1161-1168.
- Federico, F., Griffin, F., Haig, K. & Whittington, J. (2005). *100 000 lives campaign: Prevent adverse drug events medication reconciliation webinar*. Retrieved 31/06, 2005 from www.ihl.org

Forster, A. J., Clark, H. D., Menard, A., Dupuis, N., Chernish, R., & Chandok, N., et al. (2004). Adverse events among medical patients after discharge from hospital. *CMAJ : Canadian Medical Association Journal = Journal De l'Association Medicale Canadienne*, 170(3), 345-349.

Halasyamani, L., Kripalani, S., Coleman, E., Schnipper, J., van Walraven, C., Nagamine, J., et al. (2006). Transition of care for hospitalized elderly patients--development of a discharge checklist for hospitalists. *Journal of hospital medicine (Online)*, 1(6), 354-360.

Hassen, P. (2005). *Patient Safety Now!* Canadian Patient Safety Institute.

Health Quality Council of Saskatchewan (2004). *Improving the quality of drug management of Saskatchewan seniors in long-term care*.

Institute for Healthcare Improvement (2006). *100,000 lives campaign* accessed on the web 12/02/2006 at www.ihi.org

JCAHO's 2006 national patient safety goals: Handoffs are biggest challenge. (2005). *Hospital Peer Review*, 30(7), 89-93.

Joch, A. (2003). Drug safety for the long-term. Long-term care facilities have the same medication management concerns as hospitals, plus others. *Healthcare Informatics : The Business Magazine for Information and Communication Systems*, 20(7), 38.

Kohn, K. T., Corrigan, J. M., & Donaldson, M.S. (editors for the Committee on Quality of Health Care in America). (1999). *To err is human: Building a safer health system*. Washington, D.C.: Institute of Medicine, National Academy Press.

Kripalani, S., LeFevre, F., Phillips, C. O., Williams, M. V., Basaviah, P., & Baker, D. W. (2007). Deficits in communication and information transfer between hospital-based and primary care physicians: Implications for patient safety and continuity of care. *JAMA : the journal of the American Medical Association*, 297(8), 831-841.

Resar, R. K., Rozich, J. D., & Classen, D. (2003). Methodology and rationale for the measurement of harm with trigger tools. *Qual.Saf.Health.Care.*, 12 Suppl 2, ii39-45.

Safer healthcare now! Campaign (2006) accessed on the web on 10/04/2006 at www.saferhealthcarenow.ca

Spinewine, A., Swine, C., Dhillon, S., Franklin, B. D., Tulken, P. M., Wilmotte, L., et al. (2005). Appropriateness of use of medicines in elderly inpatients: Qualitative study. *British medical journal*, 331(7522), 935.

Tam, V. C., Knowles, S. R., Cornish, P. L., Fine, N., Marchesano, R., & Etchells, E. E. (2005). Frequency, type and clinical importance of medication history errors at admission to hospital: A systematic review. *CMAJ : Canadian Medical Association Journal = Journal De l'Association Medicale Canadienne*, 173(5), 510-515.

Wade, J., Baker, G. R., Bulman, A., Fraser, P., Millar, J., & Nicklin, W. (2002). A national integrated strategy for improving patient safety in Canadian health care. *Ottawa: National Steering Committee on Patient Safety. Building a Safer System*, Royal College of Physicians and Surgeons of Canada.

Wilson, R. M., Runciman, W. B., Gibberd, R. W., Harrison, B. T., Newby, L., & Hamilton, J. D. (1995). The quality in Australian health care study. *The Medical Journal of Australia*, 163(9), 458-471.

Wilson, R. M., & Van Der Weyden, M. B. (2005). The safety of Australian healthcare: 10 years after QAHCS. We need a patient safety initiative that captures the imagination of politicians, professionals and the public. *The Medical Journal of Australia*, 182(6), 260-261.

Wong, J., & Beglaryan, H. (2004). Strategies for hospitals to improve patient safety a review of the researchThe Change Foundation.

Appendix A – Semi-Structured Questionnaire



Dear Registered Nurses and Pharmacists,

We are interested in learning more about your perspective regarding the medication information you receive for a new resident admitted from an acute care hospital to your continuing care facility. The questions below were developed from the safety literature and through discussions with nurses and pharmacists. **Please note** – **this questionnaire only applies to new admissions from an acute care hospital.**

For the questions below please circle the number corresponding to your answer.

1. What is your profession?

1. Registered Nurse 2. Pharmacist

2. What is your gender?

1. Female 2. Male

3. What is your current age in years?

1. Less than 20 4. 40-49
2. 20-29 5. 50-59
3. 30-39 6. 60 or older

4. What are the first 3 digits of your postal code at home?

For example, T3E

5. How many years have you been working as a registered nurse or pharmacist in any setting?

1. ≤ 1 year 4. > 10 years to 15 years
2. > 1 year to 5 years 5. > 15 years to 20 years
3. > 5 years to 10 years 6. > 20 years

6. Do you practice, work or provide services in or to a continuing care facility?

1. Yes 2. No

If No, please do not go on to answer any more questions. Please return the questionnaire in the postage paid return envelope. Thank you for your time.

7. In the last year, have you been involved in reviewing, transferring or recording of medication information for residents admitted to your facility?

1. Yes 2. No

If No, please do not go on to answer any more questions. Please return the questionnaire in the postage paid return envelope. Thank you for your time.

8. Please circle the appropriate number that identifies the region where you practice, work or provide services to a continuing care facility. If you work in more than one region, please identify the region you work in the majority of the time.

1. Chinook Regional Health Authority 6. Capital Health Authority
2. Palliser Health Region 7. Aspen Regional Health Authority
3. Calgary Health Region 8. Peace Country Health
4. David Thompson Regional Health Authority 9. Northern Lights Health Region
5. East Central Health

9. How many years have you been working in or with the continuing care sector?

- | | |
|--------------------------|---------------------------|
| 1. ≤ 1 year | 4. > 10 years to 15 years |
| 2. > 1 year to 5 years | 5. > 15 years to 20 years |
| 3. > 5 years to 10 years | 6. > 20 years |

For the following questions (10 to 12) think back to the last admission of a new resident to your facility from an acute care hospital. Please circle the number corresponding to your answer.

10. Was the medication information received legible?

1. Never 2. Seldom 3. Mostly 4. Always 5. Not Applicable

11. Was the medication information received complete with medication name, dose, frequency and route?

1. Never 2. Seldom 3. Mostly 4. Always 5. Not Applicable

12. Was there enough information to tell if the medications prescribed were appropriate for the resident's diagnoses?

1. Never 2. Seldom 3. Mostly 4. Always 5. Not Applicable

For the following questions (13 to 17) think back to the last admission of a new resident to your facility from an acute care hospital. Please circle the number corresponding to your answer.

13. Were the medication names spelled correctly?

1. Never 2. Seldom 3. Mostly 4. Always 5. Not Applicable

14. Were the medication doses prescribed within the usual (or recommended) therapeutic dosage range?

1. Never 2. Seldom 3. Mostly 4. Always 5. Not Applicable

15. Were the medication routes specified?

1. Never 2. Seldom 3. Mostly 4. Always 5. Not Applicable

16. Were the medication dose frequencies specified?

1. Never 2. Seldom 3. Mostly 4. Always 5. Not Applicable

17. How frequently were resident's medications for chronic diseases omitted from the medication information received?

1. Never 2. Seldom 3. Mostly 4. Always 5. Not Applicable

18. In thinking about when medication information usually arrives in your continuing care facility, does it most often arrive:

1. On the same day as the residents' admission?
2. Prior to the day of the residents' admission?
3. After the day of the residents' admission?

19. When the medication information does not arrive with the resident, how long does it take to receive the medication information?

- | | |
|-----------------------------|---------------------------|
| 1. ≤ 24 hours | 3. > 48 hours to ≤ 1 week |
| 2. > 24 hours to ≤ 48 hours | 4. > 1 week |

20. Please describe what you do when the medication name, dose, frequency, or route is not complete.

21. Please describe what you do when there is not enough information to tell whether a medication is appropriate for one of the resident's diagnoses.

22. Does your continuing care facility or pharmacy use any type of tool, process or procedure (e.g. checklist, computer program) to assist in receiving medication information?

1. Yes 2. No

If Yes, please specify all tools used and briefly describe them.

If Yes, is the tool, process or procedure used consistently on all new admissions from an acute care hospital?

1. Yes 2. No

23. Please describe any strategies that you use when receiving medication information from acute care hospitals to ensure it is complete (medication name, dose, route and frequency) and has sufficient rationale (medication can be matched to the resident's list of diagnoses).

24. Please describe any other barriers or challenges you have experienced when receiving medication information for new admissions from an acute care hospital to your continuing care facility.

25. Is there anything else you would like to share about the medication information you receive for a new admission from an acute care hospital that has not been asked about already? If so, please list or describe below.

26. As this is the first time we have used this questionnaire, we would like to know if there were any questions or parts of questions you had difficulty answering. If so, please identify what question or item was involved and tell us what problem or difficulty you had.

Thank you for completing this questionnaire!

Title of Research Study:

Perspectives of Alberta Nurses and Pharmacists on Medication Information Received

If you would like to receive a copy of the executive summary of results from this research study please provide your contact information below (name, mailing address, phone number, and email address). The contact information you provide will be detached from your questionnaire responses.

Appendix B – Information Letter: Registered Nurse



Title of Research Study:

Perspectives of Alberta Nurses and Pharmacists on Medication Information Received

Investigators: Karen Earnshaw, RN, BScN - Regina Qu'Appelle Health Region
Dawn McDonald, BSP, ACPR - Calgary Health Region
Agnes Mitchell RN, MN - *The CAPITAL CARE Group*
Carol Renfree, BSc Pharm, BCPS - Peace Country Health Region

Dear Registered Nurses,

Date:

The transfer of medication information between two healthcare sectors is a transition point that is challenging and complex. A failure at this transition point poses a great risk to patient safety. Much of the research and work on the transfer of medication information focuses within the acute care setting. Despite interest from all health care provider groups about medication safety, there is very little written from the perspectives of continuing care front line staff around the complicated process of receiving medication information for residents newly admitted from the acute care sector.

We invite you to participate in the following research study: 'Perspectives of Alberta Nurses and Pharmacists on Medication Information Received' by completing a questionnaire. The research question is: **"What are the perspectives of continuing care registered nurses and pharmacists about the medication information received for new admissions from acute care hospitals?"**.

We hope the results of this study will identify some of the factors, facilitators and barriers associated with the medication information received from the acute care sector. As well, we hope the questionnaire identifies strategies that may prevent medication adverse events related to the medication information received from the acute care sector.

All information will be kept confidential, except when professional codes of ethics or legislation require reporting. The completed questionnaires will be kept in a locked filing cabinet for seven years after the study is completed. Your name, health region or any other individual identifying information will not be used in any presentation or publications of the study results. The information gathered for this study may be looked at again in the future to help us answer other study questions. If so, an ethics board will first review the study to ensure the information is used ethically. **Your decision to participate in this study is completely voluntary** and refusal to participate will not affect your employment status or your professional registration in any way. Your manager or employer will not know that you have completed this questionnaire. You have the right to refuse to answer any specific questions included in the questionnaire. **There are no benefits or risks in completing this questionnaire.**

If you have questions about your rights as a study participant or are dissatisfied with any aspect of this study, you may contact, anonymously, *Charmaine Kabatoff, Administrative Coordinator, Health Research Ethics Board - Health Panel at (780) 492-0302 or ckabatoff@med.ualberta.ca*. If you would like further information about this research, please feel free to contact any of the investigators listed below.

Title of Research Study:

Perspectives of Alberta Nurses and Pharmacists on Medication Information Received

The questionnaire will take about 15 minutes to complete. Please complete the questionnaire and return it in the enclosed stamped envelope by (DATE: 2 week turn around time). Completion of the questionnaire indicates that you have consented to participate in this study. You may keep this letter for your records.

Thank you for your time.

Karen Earnshaw, RN, BScN - Regina Qu'Appelle Health Region

Phone: (306) 697-4008 Email: karen.earnshaw@rqhealth.ca

Dawn McDonald, BSP, ACPR - Calgary Health Region

Phone (403) 944-2081 Email: dawn.mcdonald@calgaryhealthregion.ca

Agnes Mitchell RN, MN - *The CAPITAL CARE Group*

Phone (780) 496-3344 Email: agnesmitchell@capitalcare.net

Carol Renfree, BScPharm, BCPS - Peace Country Health Region

Phone (780) 538-6152 Email: carol.renfree@pchr.ca

Appendix C – E-mail notice: Pharmacist

Title of Research Study:

Perspectives of Alberta Nurses and Pharmacists on Medication Information Received

Investigators: Karen Earnshaw, RN, BScN - Regina Qu'Appelle Health Region
Dawn McDonald, BSP, ACPR - Calgary Health Region
Agnes Mitchell RN, MN - *The CAPITAL CARE Group*
Carol Renfree, BSc Pharm, BCPS - Peace Country Health Region

Dear Pharmacist,

Are you a pharmacist working in or providing services to a continuing care facility? If yes, we invite you to participate in the following research study: 'Perspectives of Alberta Nurses and Pharmacists on Medication Information Received' by completing a questionnaire. The study is trying to find out what the perspectives of continuing care registered nurses and pharmacists are about the medication information they receive for new admissions from acute care hospitals.

Your decision to participate in this study is completely voluntary. There are no benefits or risks in completing this questionnaire. The questionnaire will take about 15 minutes to complete. Please, click [here](#) to access an information letter and the questionnaire. Likewise, if you are unable or unwilling to complete the questionnaire on-line you can request a paper copy of it by calling investigator Carol Renfree at 780-538-6152.

Thank you for your interest in this research study.

Karen Earnshaw, RN, BScN - Regina Qu'Appelle Health Region
Phone: (306) 697-4008 Email: karen.earnshaw@rqhealth.ca

Dawn McDonald, BSP, ACPR - Calgary Health Region
Phone (403) 944-2081 Email: dawn.mcdonald@calgaryhealthregion.ca

Agnes Mitchell RN, MN - *The CAPITAL CARE Group*
Phone (780) 496-3344 Email: agnesmitchell@capitalcare.net

Carol Renfree, BScPharm, BCPS - Peace Country Health Region
Phone (780) 538-6152 Email: carol.renfree@pchr.ca

Appendix D – Information Letter: Pharmacist



Title of Research Study:

Perspectives of Alberta Nurses and Pharmacists on Medication Information Received

Investigators: Karen Earnshaw, RN, BScN - Regina Qu'Appelle Health Region
Dawn McDonald, BSP, ACPR - Calgary Health Region
Agnes Mitchell RN, MN - *The CAPITAL CARE Group*
Carol Renfree, BSc Pharm, BCPS - Peace Country Health Region

Dear Pharmacist,

Date:

The transfer of medication information between two healthcare sectors is a transition point that is challenging and complex. A failure at this transition point poses a great risk to patient safety. Much of the research and work on the transfer of medication information focuses within the acute care setting. Despite interest from all health care provider groups about medication safety, there is very little written from the perspectives of continuing care front line staff around the complicated process of receiving medication information for residents newly admitted from the acute care sector.

We invite you to participate in the following research study: 'Perspectives of Alberta Nurses and Pharmacists on Medication Information Received' by completing a questionnaire. The research question is: **"What are the perspectives of continuing care registered nurses and pharmacists about the medication information received for new admissions from acute care hospitals?"**.

We hope the results of this study will identify some of the factors, facilitators and barriers associated with the medication information received from the acute care sector. As well, we hope the questionnaire identifies strategies that may prevent medication adverse events related to the medication information received from the acute care sector.

All information will be kept confidential, except when professional codes of ethics or legislation require reporting. The completed questionnaires will be kept in a locked filing cabinet for seven years after the study is completed. Your name, health region or any other individual identifying information will not be used in any presentation or publications of the study results. The information gathered for this study may be looked at again in the future to help us answer other study questions. If so, the ethics board will first review the study to ensure the information is used ethically. **Your decision to participate in this study is completely voluntary** and refusal to participate will not affect your employment status or professional registration in any way. Your manager or employer will not know that you have completed this questionnaire. You have the right to refuse to answer any specific questions included in the questionnaire. **There are no benefits or risks in completing this questionnaire.**

If you have questions about your rights as a study participant or are dissatisfied with any aspect of this study, you may contact, anonymously, *Charmaine Kabatoff, Administrative Coordinator, Health Research Ethics Board - Health Panel* at (780) 492-0302 or ckabatoff@med.ualberta.ca. If you would like further information about this research, please feel free to contact any of the investigators listed below.

Title of Research Study:

Perspectives of Alberta Nurses and Pharmacists on Medication Information Received

The questionnaire will take about 15 minutes to complete. You may complete the questionnaire electronically. Likewise, if you are unable or unwilling to complete the questionnaire on-line you can request a paper copy of it by calling investigator Carol Renfree at 780-538-6152. If you request a paper copy of the questionnaire you will receive the questionnaire, information letter and a return stamped envelope in the mail. Your completed survey will be returned directly to the investigators.

Please complete the questionnaire by (DATE: 2 week turn around time). Completion of the questionnaire indicates that you have consented to participate in this study. You may keep this letter for your records.

Thank you for your time.

Karen Earnshaw, RN, BScN - Regina Qu'Appelle Health Region
Phone: (306) 697-4008 Email: karen.earnshaw@rqhealth.ca

Dawn McDonald, BSP, ACPR - Calgary Health Region
Phone (403) 944-2081 Email: dawn.mcdonald@calgaryhealthregion.ca

Agnes Mitchell RN, MN - *The CAPITAL CARE Group*
Phone (780) 496-3344 Email: agnesmitchell@capitalcare.net

Carol Renfree, BScPharm, BCPS - Peace Country Health Region
Phone (780) 538-6152 Email: carol.renfree@pchr.ca

Appendix E – Reminder Post Card

Title of Research Study:

Perspectives of Alberta Nurses and Pharmacists on Medication Information Received

Investigators:

Karen Earnshaw, RN, BScN - Regina Qu'Appelle Health Region
Dawn McDonald, BSP, ACPR - Calgary Health Region
Agnes Mitchell RN, MN - *The CAPITAL CARE Group*
Carol Renfree, BSc Pharm, BCPS - Peace Country Health Region

Dear Registered Nurses,

Date:

Two weeks ago you should have received in the mail (from CARNA) an information letter requesting your participation to complete a questionnaire about the 'Perspectives of Alberta Nurses and Pharmacists on Medication Information Received'. The questionnaire will take about 15 minutes to complete.

If you have already completed the questionnaire thank you. If you have not already completed the questionnaire, please do so and return it in the return, stamped envelope by (date). If for some reason you did not receive the questionnaire or have misplaced it, please contact investigator Carol Renfree at 780-538-6152 and another questionnaire will be mailed to you.

Thank you again for taking the time to participate in this study.

Karen Earnshaw, RN, BScN - Regina Qu'Appelle Health Region
Phone: (306) 697-4008 Email: karen.earnshaw@rqhealth.ca

Dawn McDonald, BSP, ACPR - Calgary Health Region
Phone (403) 944-2081 Email: dawn.mcdonald@calgaryhealthregion.ca

Agnes Mitchell RN, MN - *The CAPITAL CARE Group*
Phone (780) 496-3344 Email: agnesmitchell@capitalcare.net

Carol Renfree, BScPharm, BCPS - Peace Country Health Region
Phone (780) 538-6152 Email: carol.renfree@pchr.ca

Appendix F - Reminder E-mail Notice

Title of Research Study:

Perspectives of Alberta Nurses and Pharmacists on Medication Information Received

Investigators: Karen Earnshaw, RN, BScN - Regina Qu'Appelle Health Region
Dawn McDonald, BSP, ACPR - Calgary Health Region
Agnes Mitchell RN, MN - *The CAPITAL CARE Group*
Carol Renfree, BSc Pharm, BCPS - Peace Country Health Region

Dear Pharmacist,

Are you a pharmacist working in or providing services to a continuing care facility? If yes, we want your input and participation!

Two weeks ago you should have received an email from ACP requesting your participation to complete a questionnaire about the 'Perspectives of Alberta Nurses and Pharmacists on Medication Information Received'. The questionnaire will take about 15 minutes to complete.

If you have already completed the questionnaire thank you. If you have not already completed the questionnaire, please click [here](#) to access the questionnaire until (date). Likewise, if you are unable or unwilling to complete the questionnaire on-line you can request a paper copy of it by calling investigator Carol Renfree at 780-538-6152.

Thank you again for taking the time to participate in this study.

Karen Earnshaw, RN, BScN - Regina Qu'Appelle Health Region
Phone: (306) 697-4008 Email: karen.earnshaw@rqhealth.ca

Dawn McDonald, BSP, ACPR - Calgary Health Region
Phone (403) 944-2081 Email: dawn.mcdonald@calgaryhealthregion.ca

Agnes Mitchell RN, MN - *The CAPITAL CARE Group*
Phone (780) 496-3344 Email: agnesmitchell@capitalcare.net

Carol Renfree, BScPharm, BCPS - Peace Country Health Region
Phone (780) 538-6152 Email: carol.renfree@pchr.ca

Appendix G – Budget

Budget

Data Query and Entry	=	\$ 928.00
Data Query		
- CARNA \$50.00hr x 6	=	\$ 300.00
- SurveyMonkey™ \$19.95 (U.S.) x 3 months	=	\$ 73.00
Administrative services		
- CARNA \$25.00 X 3 (minimum 2 hours)	=	\$ 75.00
- ACP	=	\$ 100.00
Support Staff		
- General - \$15.00/hour x 6 hours	=	\$ 90.00
- Data entry - \$15.00/hour x 6 hours	=	\$ 90.00
- Transcriptionist \$20.00 x 10 hours	=	\$ 200.00
Office Supplies	=	\$ 508.16
- Envelopes - qty: 1000 (24cmx14.5cm)	=	\$ 34.00
- Paper - qty: 2000(information letter & survey)	=	\$ 14.36
- Postcard - qty: 540 (60/box)	=	\$ 109.80
- Printing/copying	=	\$ 250.00
- Poster	=	\$ 100.00
Postage	=	\$1245.00
- envelopes qty:1000 x \$0.89	=	\$ 890.00
- postcards qty: 500 x \$0.51	=	\$ 255.00
- dissemination of results (paper & stamps)	=	\$ 100.00
Travel Costs for Investigators (Analysis and write-up)	=	\$2290.00
One meeting scheduled in Calgary for data analysis. Other investigator meetings will be using web conferencing and Skype.		
Flight: Regina to Calgary	=	\$ 470.00
Flight: Grande Prairie to Calgary	=	\$ 470.00
Mileage:		
Edmonton to Calgary	=	\$ 220.00
(\$0.43 x 512 km)		
Accommodation:		
Hotel rooms		
(2 nights at 100.00 plus tax = \$230.00	=	\$ 660.00
X 3 investigators*) *1 investigator lives locally		
Meals:		
(2 days x \$40.00/day x 4 investigators)	=	\$ 320.00
Incidentals:		
(parking, taxi, gas)	=	\$ 150.00
Total Cost of Project	=	\$4971.16

Appendix H – CARNA Letter of Support



File No: 4056-00
Re-sent August 22, 2006

July 25, 2006

VIA EMAIL

Charmaine Kabatoff
Administrative Coordinator
Health Research Ethics Board - Health Panel
ckabatoff@med.ualberta.ca

To Whom It May Concern:

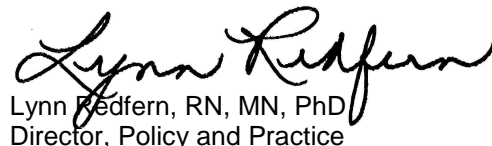
On behalf of the College and Association of Registered Nurses of Alberta (CARNA), I am pleased to offer this letter of support for the proposed study entitled: *Perspectives of Alberta Nurses and Pharmacists on Medication Information Received*. CARNA is the professional and regulatory body for the more than 28,000 registered nurses in Alberta.

This area of research is both important and timely, in terms of patient safety. Numerous patient safety reports over the past few years have highlighted medication errors as a key focus of concern. In particular, the issue of medication reconciliation at the point of client admission or transfer from one care setting to another has received particular attention. The Institute for Healthcare Improvement's "100,000 Lives Campaign", completed in June 2006, targeted medication reconciliation as one of six patient safety strategies with the greatest potential to prevent avoidable deaths in acute care hospitals. It is encouraging that the proposed study will attempt to look at this issue from the perspective of health care professionals in continuing care settings, where clients often have multiple medical conditions and complex medication profiles.

CARNA is confident that the proposed investigative team, with the support of its SEARCH advisors, will possess the knowledge, skills and experience to complete this research. The findings will be of considerable interest across Alberta's nursing community and other health system stakeholders.

Thank you for the opportunity to provide written support.

Sincerely,



Lynn Redfern, RN, MN, PhD
Director, Policy and Practice

Appendix I – ACP Letter of Support

June 16, 2006



Dawn McDonald
Drug Therapy Management Pharmacist
Peter Lougheed Centre - 3500 26th Avenue N.E.
Calgary, Alberta T1Y 6J4

safe
effective
dependable
pharmacist
practice

Dear Ms. McDonald:

Re: SEARCH Group project- Medication Safety

The Alberta College of Pharmacists appreciates that the SEARCH Group has approached us to support the research project intended to study medication information transfer to continuing care facilities from acute care facilities.

The Alberta College of Pharmacists governs the pharmacy profession in Alberta, supports and protects the public's health and well-being and ensures excellent pharmacist practice by setting and enforcing high standards of practice, competence and ethical conduct.

The Alberta College of Pharmacists is pleased to support this research because the findings could play a role in enhancing patient safety through multidisciplinary collaboration.

Sincerely,

Jill Moore-Kirkland, CPh, RPh (Pharm)
Registration Director
Alberta College of Pharmacists

Appendix J - Information Letter: General



Title of Research Study:

Perspectives of Alberta Nurses and Pharmacists on Medication Information Received

Investigators: Karen Earnshaw, RN, BScN - Regina Qu'Appelle Health Region,
Dawn McDonald, BSP, ACPR - Calgary Health Region
Agnes Mitchell RN, MN - *The CAPITAL CARE Group*,
Carol Renfree, BSc Pharm, BCPS - Peace Country Health Region

The SEARCH Canada Classic Program provides an opportunity for health regions and organizations to build organizational capacity for evidence-informed decision making. The program is now in its tenth year of operation and all of Alberta's Health Regions have sponsored participants. Part of the program involves a research project based on provincial priorities identified by the health regions. One of the priorities identified for SEARCH V was medication safety.

The transfer of medication information between two healthcare sectors is a transition point that is challenging and complex. A failure at this transition point poses a great risk to patient safety. Much of the research and work on the transfer of medication information focuses within the acute care setting. Despite interest from all health care provider groups about medication safety, there is very little written from the perspectives of continuing care front line staff around the complicated process of receiving medication information for residents newly admitted from the acute care sector.

Through a questionnaire, our research study: 'Perspectives of Alberta Nurses and Pharmacists on Medication Information Received' hopes to identify some of the factors, facilitators and barriers associated with the medication information received on new admissions from the acute care sector. As well, we hope the questionnaire identifies strategies that may prevent medication adverse events related to the transfer of medication information in this vulnerable population.

The College and Association of Registered Nurses of Alberta (CARNA) will distribute the questionnaire to a random sample of their membership that have indicated their area of practice or interest as geriatrics and that they are interested in participating in research. The Alberta College of Pharmacists (ACP) will distribute an email to all of their membership inviting pharmacists working in or providing services to continuing care to complete the questionnaire. The majority of participants will work in one of Alberta's Health regions, however, at no time, will their name, health region or any other individual identifying information be disclosed.

If you would like further information about this research study or would like to receive a copy of the executive summary of results from this research study, please feel free to contact any of the investigators listed below.

Sincerely,

Karen Earnshaw, RN, BScN - Regina Qu'Appelle Health Region
Phone: (306) 697-4008 Email: karen.earnshaw@rqhealth.ca
Dawn McDonald, BSP, ACPR - Calgary Health Region
Phone (403) 944-2081 Email: dawn.mcdonald@calgaryhealthregion.ca
Agnes Mitchell RN, MN - *The CAPITAL CARE Group*
Phone (780) 496-3344 Email: agnesmitchell@capitalcare.net
Carol Renfree BSc Pharm, BCPS - Peace Country Health Region
Phone (780) 538-6152 Email: carol.renfree@pchr.ca